Installation and Maintenance Manual	IM 980-1
	Group: **Applied Air Systems**
	Part Number: **910150486**
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ThinLine™ 3G Vertical Fan Coils

Type FCVC, FCVH, FCVS and FCWC Vertical Design

200 to 1200 cfm

Model FCVC

Model FCVS

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Thinline™ 3G Vertical Fan Coils are intended for use in single zone applications. They are available in sizes from 200 to 1200 cfm. Figure 2 describes the main features of these units and can be refered to for component placement. These units are available in two-pipe configurations with one hydronic coil, with or without electric heat. They are also available in four-pipe configurations with one primary coil and a secondary reheat or preheat coil. A variety of factory-built piping packages are available, either factory or field-installed.

Units are available with a variety of thermostat and fan speed control options, which can be mounted on the unit or shipped loose for mounting in the controlled space. Options include:

- Four-position fan switch (Off/Lo/Med/Hi).
- Manual thermostat with On/Off valve control.
- Digital thermostat with a variety of control options, including fan control, On/Off or modulating valve control and automatic changeover from heating to cooling on two-pipe systems.
- Low-voltage interface board for connecting a unit to controls provided by others. The controls interface option includes a 24 volt AC transformer and interface terminal strips.
- No Controls, with pigtail connections to the unit's fan motor wiring harness.

Figure 1: Nomenclature (see Table 1, page 29 for complete model number description)

FC V S - 1 02 A

Unit Type
FC = Fan Coil
FH = Cabinet Unit Heater

Unit Configuration
V= Vertical
W = Wall Hung (future)

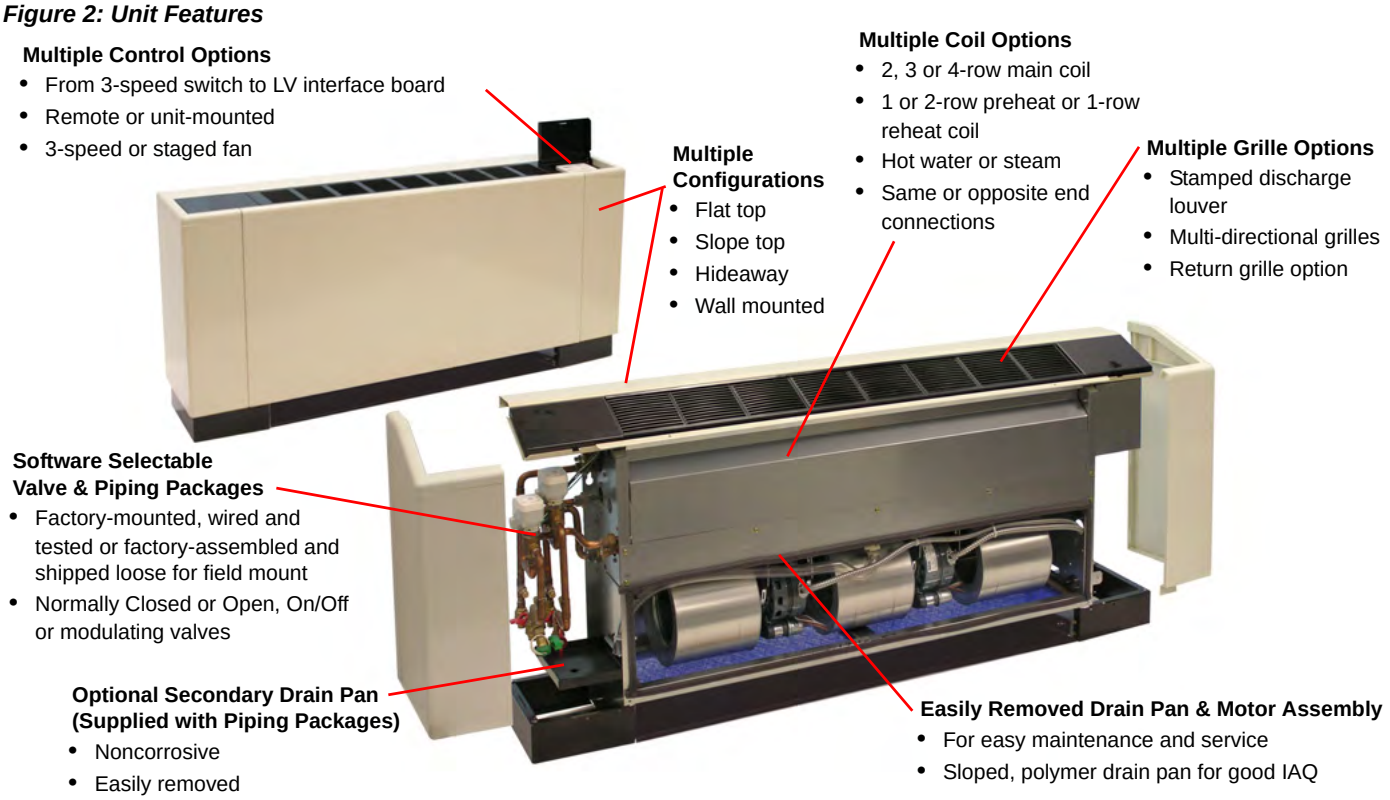
Cabinet Type
C = Cabinet (Flat Top)
S = Slope Top
H = Hideaway

Voltage
A = 115/60/1
E = 208-230/60/1
J = 277-265/60/1

Unit Size
02 = 200 CFM
03 = 300 CFM
04 = 400 CFM
06 = 600 CFM
08 = 800 CFM
10 = 1000 CFM
12 = 1200 CFM

Design Series

Figure 2: Unit Features


Multiple Control Options
• From 3-speed switch to LV interface board
• Remote or unit-mounted
• 3-speed or staged fan
Multiple Configurations
• Flat top
• Slope top
• Hideaway
• Wall mounted
Multiple Coil Options
• 2, 3 or 4-row main coil
• 1 or 2-row preheat or 1-row reheat coil
• Hot water or steam
• Same or opposite end connections
Multiple Grille Options
• Stamped discharge louver
• Multi-directional grilles
• Return grille option
Software Selectable Valve & Piping Packages
• Factory-mounted, wired and tested or factory-assembled and shipped loose for field mount
• Normally Closed or Open, On/Off or modulating valves
Optional Secondary Drain Pan (Supplied with Piping Packages)
• Noncorrosive
• Easily removed
Easily Removed Drain Pan & Motor Assembly
• For easy maintenance and service
• Sloped, polymer drain pan for good IAQ

Receiving and Storage

Upon receipt of the equipment, check carton for visible damage. Make a notation on the shipper's delivery ticket before signing. If there is any evidence of rough handling, immediately open the cartons to check for concealed damage. If any damage is found, notify the carrier within 48 hours to establish your claim and request their inspection and a report. The Warranty Claims Department should then be contacted.

Do not stand or transport the machines on end. For storing, each carton is marked with "up" arrows.

Temporary storage at the job site must be indoor, completely sheltered from rain, snow, etc. High or low temperatures naturally associated with weather patterns will not harm the units. Excessively high temperatures, 140°F (60°C) and higher, may deteriorate certain plastic materials and cause permanent damage.

⚠ IMPORTANT

This product was carefully packed and thoroughly inspected before leaving the factory. Responsibility for its safe delivery was assumed by the carrier upon acceptance of the shipment. Claims for loss or damage sustained in transit must therefore be made upon the carrier as follows:

VISIBLE LOSS OR DAMAGE

Any external evidence of loss or damage must be noted on the freight bill or carrier's receipt, and signed by the carrier's agent. Failure to adequately describe such external evidence of loss or damage may result in the carrier's refusal to honor a damage claim. The form required to file such a claim will be supplied by the carrier.

CONCEALED LOSS OR DAMAGE

Concealed loss or damage means loss or damage which does not become apparent until the product has been unpacked. The contents may be damaged in transit due to rough handling even though the carton may not show external damages. When the damage is discovered upon unpacking, make a written request for inspection by the carrier's agent within fifteen (15) days of the delivery date and file a claim with the carrier.

Pre-Installation

Before beginning installation, please read this publication in its entirety. Directions given in this bulletin for right and left sides or coil hand assume a position facing the front of the unit.

1. To prevent damage, do not operate this equipment for supplementary heating and cooling during the construction period. Doing so will void the warranty.
2. Inspect the carton for any specific tagging numbers indicated by the factory per a request from the installing contractor. At this time the voltage, phase and capacity should be checked against the plans.
3. Check the packing list and unit identification/tagging numbers against the plans to verify that the unit is being installed in the correct location. The unit data plate is attached to the deck plate on the front of the fan coil (see Figure 3). Remove the front panel on cabinet units to access it. The panel contains specific information on standard components as listed in Figure 1, page 3 and in Table 1, page 29.

Figure 3: Data Plate Location

4. Before installation, check the available dimensions where the unit is to be installed against the dimensions of the unit.
5. Note the location and routing of water piping, condensate drain piping, and electrical wiring. The locations of these items are clearly marked on submittal drawings.
6. An installing contractor may find it beneficial to confer with piping, sheet metal, and electrical foremen before installing any unit.

Note: Check the unit data plate for correct voltage with the plans before installing the equipment. Also, make sure all electrical ground connections are made in accordance with local code.

7. The unit is <u>not</u> designed to be free-standing. Install it against a wall or other flat surface that meets fire and electrical codes requirements for heating and cooling devices.
8. After installation, cover the unit with the shipping carton or other appropriate material for protection during finishing of the building. This is critical while spraying fireproofing material on bar joists, sandblasting, spray painting and plastering. Damage to the unit due to a failure to protect it during finishing of the building is not covered by the warranty.

Fresh Air Box Openings

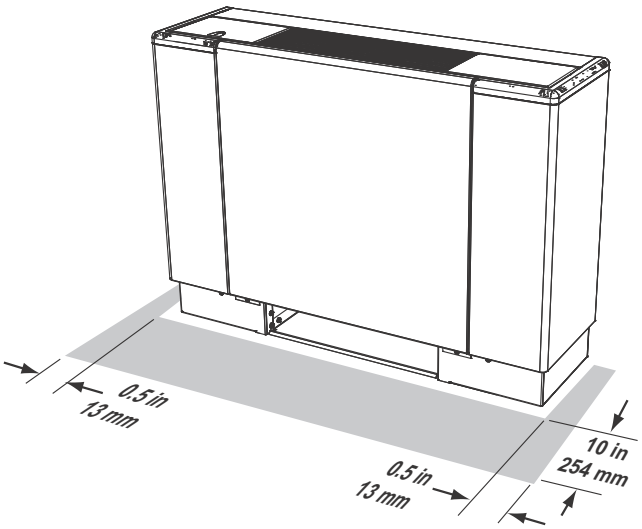
ThinLine 3G Vertical Fan Coils can be installed with an optional fresh air box that is designed to let in outside air while preventing water (such as rain) from getting into the unit itself. If used, prior to unit installation, confirm that the exterior wall opening and the wall box are ready and installed in accordance with the job plans.

Recommended Maintenance Clearance

Cabinet units have removable front and side panels for easy access to components for service and maintenance. The fan assembly and main drain pan are easily removable from the front for cleaning. See Accessing/removing the main drain pan and motor assembly, page 19 for more information.

Figure 4 shows recommended maintenance clearances: 0.5 inches (13 mm) on either side and 10 inches (254 mm) in front. Units are referred to as either right-hand or left-hand depending upon the piping connection. Hand is designated by facing the front of the unit (airflow discharges from the front or top). Unless it is a special-order unit, the control panel is always on the end opposite the cooling coil pipe connections.

Figure 4: Recommended maintenance clearance



Duct Connections

Air ducts, when used with hideaway units, should be installed in accordance with local and national codes, including National Fire Protection Association standards for the Installation of Air Conditioning and Ventilating Systems and the National Fire Protection Association standards for the Installation of Air Conditioning and Ventilation Systems other than Residence Type.

A one-inch duct collar is provided on units with a ducted return and/or discharge to attach ductwork. Daikin recommends using galvanized sheet metal ductwork. Slide the sheetmetal duct over the duct collar flange of the unit, seal the joint and fasten with sheetmetal screws.

Note: Do not run screws through the removable front panel on hideaway units.

Ductwork Recommendations

Follow the general recommendations listed below when installing the ductwork for the unit.

1. Discharge ductwork should run in a straight line, unchanged in size or direction, for a minimum distance of three fan diameters from the unit (approximately 20 inches).
2. Avoid making sharp turns when making duct turns and transitions. Use proportional splits, turning vanes, and air scoops when necessary.
3. When possible, construct and orient supply ductwork turns in the same direction as the fan rotation.

Safety

Follow all safety codes. Wear safety glasses and work gloves. Use a quenching cloth for brazing operations. Have a fire extinguisher available. Follow all warnings and cautions in these instructions and attached to the unit. Consult applicable local building codes and National Electrical Codes (NEC) for special requirements.

Recognize safety information. When you see a safety symbol on the unit or in these instructions, be alert to the potential for personal injury. Understand the meanings of the words DANGER, WARNING, and CAUTION. DANGER identifies the most serious hazards that will result in death or severe personal injury; WARNING means the hazards can result in death or severe personal injury; CAUTION identifies unsafe practices that can result in personal injury or product and property damage. Improper installation, adjustment, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may result in personal injury or property damage. This product must be installed only by personnel with the training, experience, skills, and applicable licensing that makes him/her “a qualified professional HVACR installer.”

⚠ DANGER

Disconnect all electrical power before servicing unit. Electrical shock will cause severe injury or death.

⚠ WARNING

Hazardous Voltage!
Use copper conductors only. Unit terminals are not designed to accept other types of conductors. Failure to do so may cause damage to the equipment.

⚠ WARNING

Personal injury hazard. Wear protective gloves to avoid possible cuts and abrasions from exposed edges. Avoid contact with sharp edges.

⚠ CAUTION

Cleaning agents may cause serious damage to internal components, such as aluminum coils and electronic controls, etc. Do not operate fan coil while building maintenance cleaning agents are in use..

Uncrating and Inspecting the Unit

1. Carefully remove the packaging, remaining alert to any signs of shipping damage. Be careful not to discard components that may be included with the packaging.
2. If the unit is damaged, file a claim with the carrier. Notify the local Daikin representative immediately.
3. You may want to retain some or all of the packaging to provide jobsite unit location information and temporary protection for the fan coil after installation. Be sure to dispose of plastic packaging and protective cardboard properly, in accordance with local recycling rules and guidelines.

⚠ WARNING

Plastic packaging is a suffocation hazard, dispose of properly. Keep away from children.

4. Touch up painted panels if necessary. If panels need paint, sanding is not necessary. However, clean the surface of any oil, grease, or dirt residue so the paint will adhere. Purchase factory approved touch up paint from your Daikin representative or Daikin Factory Service.

Mounting Unit to Wall

⚠ WARNING

Installation and maintenance are to be performed by qualified personnel who are familiar with local codes and Regulations, and experienced with this type of equipment..

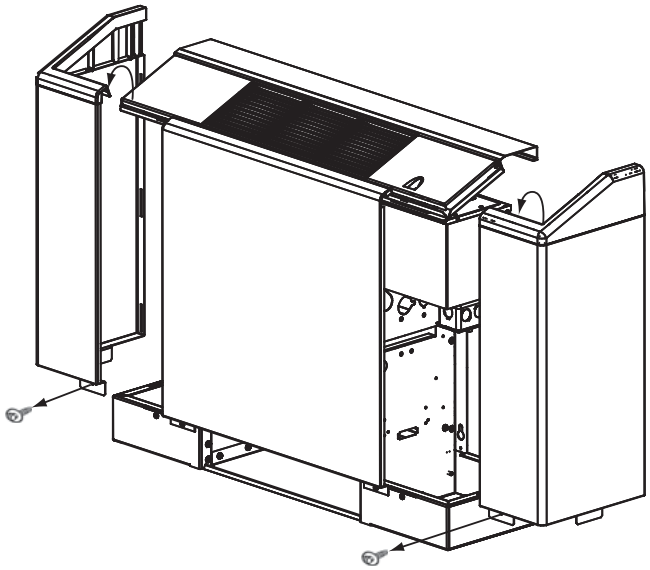
⚠ CAUTION

Personal injury hazard. Wear protective gloves to avoid possible cuts and abrasions from exposed edges. Avoid contact with sharp edges.

1. Consult job blueprints for unit location.
2. Clean area where unit is to be installed, removing all construction dirt and debris. Remove any mouldings at the floor or wall.
3. Remove the unit from the shipping carton and plastic covering. Save the carton and plastic to use as a protective cover after the installation is complete.
4. On cabinet units, remove the screws shown in Figure 5 that secure the right and left cabinet corner panels to the subbase. For ease of installation, you may also remove the center panel. Lift the panels up and out.

Note: Set the unit panels aside where they will not be damaged. Take care not to bend the mounting tabs on the bottom of the panels.

Figure 5: Cabinet Side Panel Removal



5. STOP! If an outside air damper kit is to be installed, install it now. See Fresh Air Damper, page 16 and the IM included with the damper for more information.
6. Position the chassis/subbase against the wall where the unit is to be installed. Make sure that the area under the unit is free of combustible materials such as carpet. For cabinet units, the wall must act to close off the back of the unit.
7. For hideaway units, if you are using Daikin's decorative wallplate, use blocks or other suitable material to raise the unit off the floor a minimum of 1.5 inches (38 mm).
8. Make sure electrical and piping connections are in the proper location within the end compartments. The control box is in the end compartment opposite the main coil piping connections. Power to the unit is hooked up through the junction box/disconnect box located under the control box. See Figure 30, page 21 through Figure 33, page 24 for location information.
9. Use a level to check that the unit is level both front to back and side to side (see Figure 6). Adjust the unit as needed using the optional leveling legs or shims.

⚠ CAUTION

It is critical that the unit is level to avoid condensate accumulation in the drain pan. This is especially important when using a stainless steel drain pan which does not have a sloped bottom.

10. The chassis has a series of slots on the back flange to mount the assembly to the wall. Transfer a mark with a marker or pencil to the wall at the mounting hole locations.
11. Insert fasteners through the mounting holes in the chassis and secure the unit to the wall. Do not over-tighten fasteners. It is the installing contractor’s responsibility to

select the correct fasteners for each unit to meet local codes. At location(s) where no stud is present, secure with a Toggle bolt or equivalent.

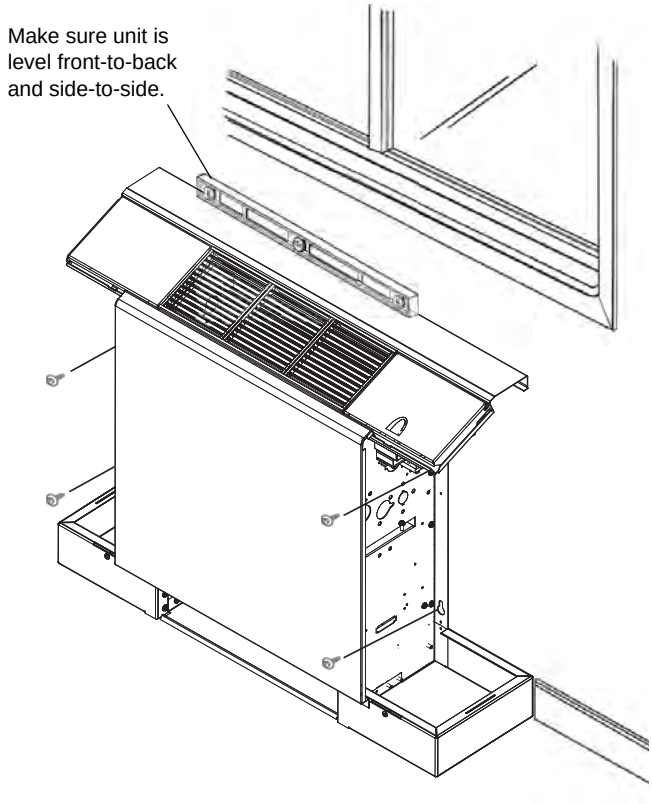
Note: Use a minimum of two fasteners on each side to secure the unit (field supplied).

12 On cabinet units, reinstall the side/quarter panels in reverse order as performed in step 4.

13 If you raised the unit off the floor in step 7, remove the block or other material supporting the bottom of the unit. Make sure the unit is securely fastened to and supported by the wall mounts.

14 Cut out one side and the bottom of the shipping carton, leaving the top and three sides to place over the unit for protection during construction.

Figure 6: Unit Mounting



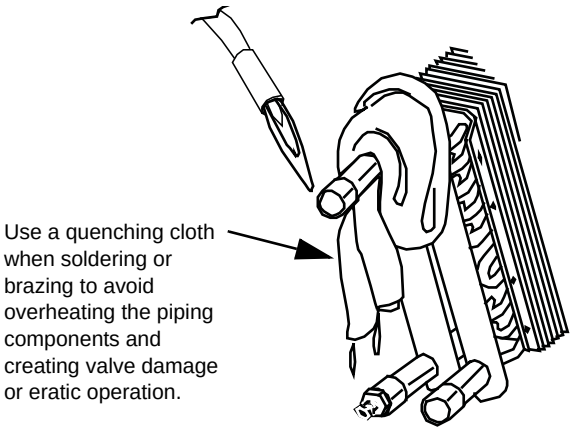
Water Piping Connections

General Guidelines

1 Piping can be steel, copper or PVC, but must comply with local codes.

2 Proper ventilation is required for soldering. When soldering, use a quenching cloth to protect fan coil components from overheating damage—melting insulation, also damage to valves, wiring, electronics, sensors, etc. See Figure 7. When Daikin provides valve packages with unions, o-rings are included. When soldering near unions, remove the o-rings before heating.

Figure 7: Protect Components From Overheating


Use a quenching cloth when soldering or brazing to avoid overheating the piping components and creating valve damage or eratic operation.

3 If sealant compound is not provided for flexible hose fittings, apply Teflon tape to the connections to help prevent leaks.

4 Ensure proper insulation of supply and return piping. Proper insulation prevents loss of fan coil capacity, overheating of end compartments, and/or moisture dripping.

5 The piping to and from the unit must be protected from outside air and freeze conditions. It must be suitably insulated for condensation and for heat loss or gain. Penetrations entering the unit end compartments must be fitted/sealed for unit integrity.

6 Exterior condensate may be an issue if field piping does not have a control valve. Review the supply and return header locations in the Dimensions drawing beginning on page 21. If using a field-assembled piping package, allow sufficient room to install the secondary drain pan. Piping for chilled water should not extend over the edges of the secondary condensate drain pan.

7 Supply and return shutoff valves are recommended at each unit. The return valve is used for balancing and should have a “memory stop” so that it can always be closed off, but can only be re-opened to the proper position for the flow required.

8 Primary coils are factory-equipped with vents for venting the system, but secondary coils (preheat or reheat) are not. If the unit is not equipped with a factory-built piping packages, then a vent must be added. See step 1, page 8.

9 Be sure to install control valves on the correct fan coil. Indiscriminate mixing of valves in the field can result in valves improperly sized for the desired flow rate, which can result in poor operation and coil freezeups.

10 Install control valves so there is at least 2" (51mm) minimum clearance to remove the actuator from the valve body.

11 Do not connect a unit to the supply and return piping until the water system has been cleaned and flushed completely. After this is done, the initial connection should have all valves wide open in preparation for water system flushing.

12 Condensate piping can be steel, copper, or PVC. A means of disconnection must be furnished to facilitate fan section removal.

13 No point of the drain system may be above the drain pan of any unit.

14 Automatic flow control devices must not be installed prior to system cleaning and flushing.

15 Check local code for any requirement for electrical fittings.

Connecting to a Factory-Installed Valve & Piping Package

To view connection locations for factory-installed valve & piping packages, see Figure 34, page 25. Before installing supply and return lines to a factory piping package, review the following items.

- All piping connections are 5/8" O.D.S. (1/2" nominal) female copper connections.
- Supply and return piping should not interfere with the secondary drain pan or condensate line.
- The installer must provide adequate piping system filtration and water treatment.
- Daikin Deluxe and Enhanced piping packages include a strainer which prevents debris from entering the coil. Clean the strainer regularly.
- The fan coil ships with brackets to adequately support the piping package during shipment. Remove these brackets before connecting water piping to the unit.
- Set end valves to the fully open position to prevent damage to the valve seat during brazing.
- Remove the secondary drain pan, if in place, to prevent exposure to dripping solder or excessive temperatures.
- Solder water piping connections to supply and return end connections. Avoid overheating factory soldered joints to prevent the possibility of leakage.
- Insulate fan coil piping to secondary drain pan connections and any piping that is not above the secondary drain pan.

Field-Installed Valve & Piping

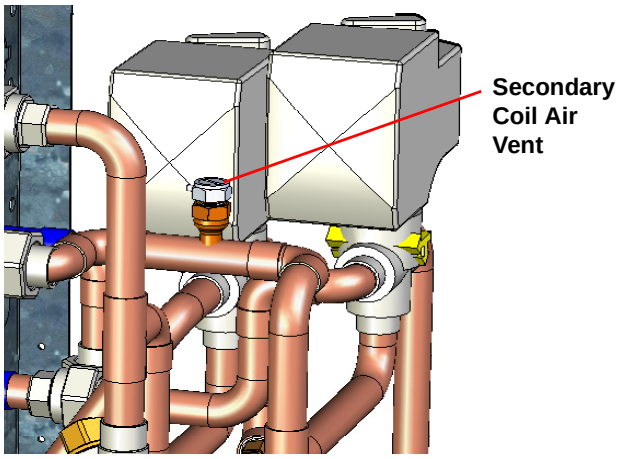
Review General Guidelines, page 7 before beginning. Then carry out the following steps to install valves and piping.

1 For units equipped with a secondary coil make sure that an air vent is included in the return line piping (see Figure 8). Primary coils are factory-equipped with vents for venting the system, but secondary coils (preheat or reheat) are not.

⚠ IMPORTANT

Venting is required on the return piping for secondary preheat or reheat coils. It is included on factory-built piping packages, but must be added by the installing contractor for field-installed piping. See Figure 8.

Figure 8: Secondary Coil Air Vent



2 Remove the secondary drain pan, if in place, to prevent exposure to dripping solder or excessive temperatures.

Note: Factory-installed valve and piping packages include the secondary drain pan, which ships with the unit. For other arrangements, the secondary drain pan must be ordered separately.

3 Push the main drain pan condensate hose back inside the end plate to prevent it from getting burned when making sweat connections. Be sure to pull the hoses back through and route to the secondary drain pan when the end panel has cooled.

4 Slide ½" copper tubing or connection couplings (installer provided) onto the coil connections. Solder the joint using a good-quality, lead-free solder to provide a watertight connection.

⚠ WARNING

Avoid overheating when soldering field connections to the coil to prevent leakage, overheating of the copper tubes, and melting of valves, factory-soldered joints or component gasketing. A quenching cloth is recommended. See Figure 7.

5 After connections are complete, insulate all piping to the coil connections as necessary to prevent condensate from dripping outside of the secondary drain pan.

6 Install the optional secondary drain pan.

Shutoff/Balancing Valve

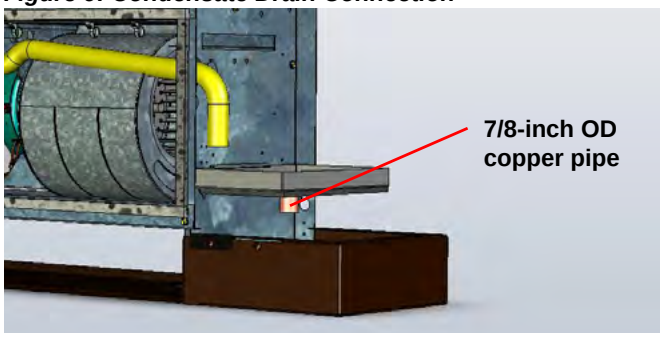
Each fan coil should be at least be equipped with shutoff valves on both the supply and return lines for easy serviceability and removal if it becomes necessary. We suggest using our combination shutoff/balancing valves between the

main supply line and the fan coil unit. These can be furnished as part of a factory-installed valve & piping package or they can be installed in the field. The balancing valve installed on the return line is used to adjust the water flow to provide the best performance.

Condensate Drain Connection

1. Connect a copper or plastic pipe to the 7/8 inch copper pipe on the secondary drain pan. This should be a mechanical connection that allows easy removal of the secondary drain pan when servicing the piping end pocket.
2. Slide the pipe over the drain pan nipple and tighten the collar on the pipe with a hose clamp (installer supplied). A drain line pitch of one inch per ten feet of drain line run must be maintained to provide adequate condensate drainage.
3. The drain line should be supported to prevent undue stress on the secondary drain pan. Make sure the drain line is free of kinks and obstructions and the secondary drain pan is level.
4. The installer is responsible for adequately insulating field piping. See External Insulating Requirements, page 10 for more information.

Figure 9: Condensate Drain Connection

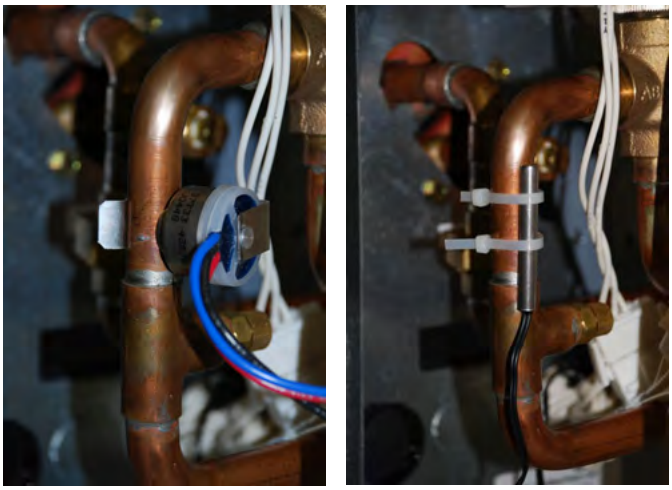


Automatic Changeover Sensor

Two-pipe changeover units require an automatic changeover switch or pipe sensor that determines heating or cooling mode based on the supply water temperature. A switch is provided with a unit-mounted analog thermostat on a two-pipe system. A sensor is provided with any digital control on a two-pipe system. On units with a factory-installed valve & piping package, the factory straps the changeover switch or sensor to the piping supply water pipe. See Figure 10.

For a two-pipe system with intermediate electric heat, a second set is required including a changeover switch or sensor.

Figure 10: Changeover switch & sensor attachment



Changeover switch **Changeover sensor**

If the unit does not have a factory-installed valve & piping package, the changeover switch or sensor can be ordered for field installation. The installer should attach the sensor or auto-changeover switch parallel to and in direct contact with the supply water pipe.

Note: The installer is responsible to ensure the changeover sensor is installed in a location that can sense active water temperature. Otherwise, the unit may fail to sense the correct operating mode and disable temperature control.

When using field-supplied three-way valves, install the changeover sensor upstream of the valve on the supply water pipe. When using field-supplied two-way control valves, install the changeover sensor in a location that will detect active water temperature. The unit must always be able to sense the correct system water temperature, regardless of the control valve position.

Note: The maximum length of the automatic changeover wire cannot exceed ten feet from the control panel to the sensor. If the wire extends beyond the unit chassis, use shielded conductors to eliminate radio frequency interference (RFI).

Steam Piping Connections

⚠ CAUTION!

Coil Damage!
In all steam coil installations, the condensate return connections must be at the low point of the coil to ensure condensate flows freely from the coil at all times. Failure to do so may cause physical coil damage from water hammer, unequal thermal stresses,freeze-up and/or corrosion.

Make piping connections to the steam coil per job requirements. (Daikin does not supply steam piping connections.) Install a 1/2", 15-degree swing check vacuum breaker in the unused condensate return trapping as close as possible to the coil.The following procedures are recommended:

1. Vent the vacuum breaker line to atmosphere or connect it into the return main at the discharge side of the steam trap.
2. Pitch all steam supply and return mains down a minimum of one inch per ten feet in the direction of flow.
3. Do not drain the steam mains or takeoff through the coils. Drain the mains ahead of the coils through a steam trap to the return line.
4. Overhead returns require one psig of pressure at the steam trap discharge for each two-feet elevation to ensure continuous condensate removal.
5. Proper steam trap selection and installation is necessary for satisfactory coil performance and service life. For installation, use the following steps:
   - **a** Position the steam trap discharge at least 12 inches below the condensate return connection. This provides sufficient hydrostatic head pressure to overcome trap losses and ensure complete condensate removal.
   - **b** Daikin recommends using flat and thermostatic traps because of gravity drain and continuous discharge operation.
   - **c** Use float and thermostatic traps with atmospheric-pressure gravity condensate return, with automatic controls or where the possibility of low pressure supply steam exists.
   - **d** Always install strainers as close as possible to the trap inlet side.

Two-pipe systems with electric heat

The electric heating coil is designed to be the total source of heat for the unit. If used for auxiliary intermediate season heating, additional control is required. A second switch or pipe sensor is required. Contact your Daikin representative for more information.

To protect the electric heat elements, an automatic and manual electric heat switch disengages the electric heat to prevent overheating. For information on resetting the manual switch, see Electric Heat Over-Temp Reset Button, page 17.

External Insulating Requirements

Insulate and vapor-seal surfaces that are colder than the surrounding air dew point to prevent unplanned condensation. Daikin recommends field-insulation in the following areas to prevent potential condensate problems:

- Supply and return water piping connections
- Condensate drain lines and connections
- Fresh air intake duct connections
- Discharge duct connections
- Wall boxes

Electrical Connections

Installation and maintenance must be performed only by qualified personnel who are familiar with local codes and regulations, and are experienced with this type of equipment.

⚠ DANGER

Hazardous Voltage!

The installer must determine and follow all applicable codes and regulations. This equipment presents hazards of electricity, rotating parts, sharp edges, heat and weight. Failure to read and follow instructions can result in property damage, severe personal injury or death.

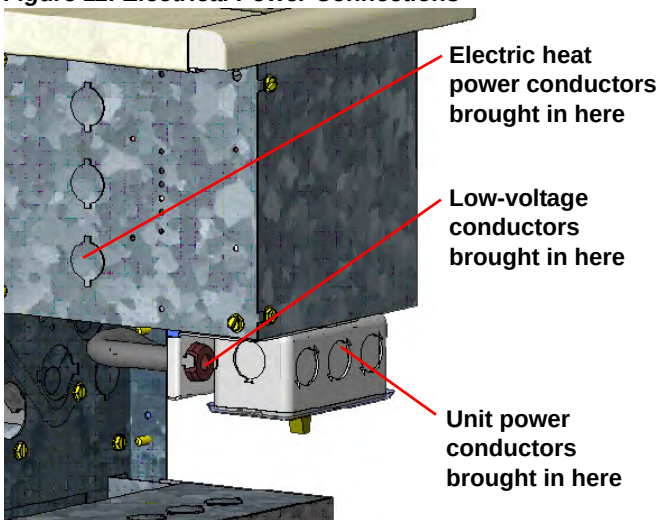
Standard Electrical Connection

Field electrical power connections are made in the electrical junction box, which is mounted to the control box on the side of the chassis opposite the primary coil piping connections. See Figure 11. If the unit is equipped with an optional disconnect switch, it is located in this junction box.

Units with an electric heat option that has the same voltage as the unit can bring the power conductors into this same junction box. Units with electric heat that has a different voltage should bring the electric heat into one of the knockouts on the control box. See Figure 11.

Low voltage wires should be brought into the conduit located next to the field electrical power junction box. See Figure 11.

Figure 11: Electrical Power Connections


Electric heat power conductors brought in here
Low-voltage conductors brought in here
Unit power conductors brought in here

If electrical wiring or conduit comes through the floor, all wires or conduit should be sealed at this point. It will prevent any condensation or water leakage that may occur due to lack of preventive maintenance.

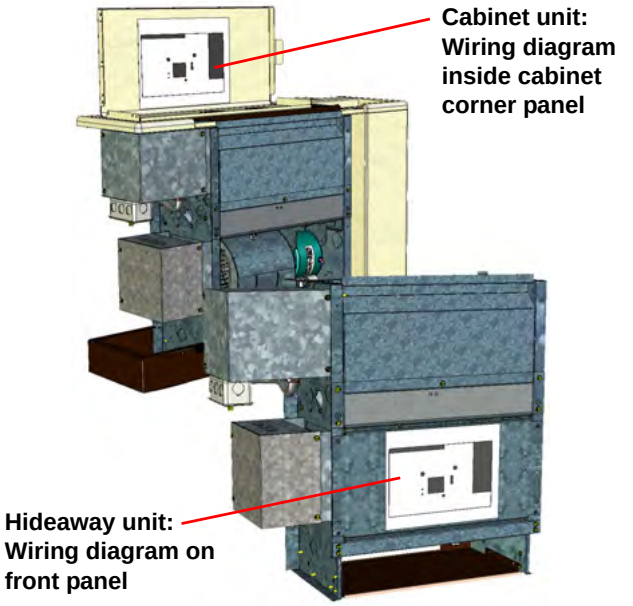
Note: Wiring coming through the wall should be sealed to stop cold air infiltration through the wall cavity, which could affect unit thermostat operation. Wiring coming through the floor should be sealed to prevent condensation or water leakage from reaching live wires.

Install a strain relief and pass the wires through the strain relief into the junction box. Make the connections and reinstall the junction box cover.

Electrical Data

The wiring diagram for the unit is attached to the inside of the corner panel on cabinet units. It is attached to the front cover of the unit on hideaway units. See Figure 11. Be sure the available power is the same voltage and phase as that shown on the unit serial plate. See Figure 3, page 4 for the location of the serial plate.

Figure 12: Wiring Diagram Locations



Line and voltage wiring must be done in accordance with local codes or the National Electrical Code, whichever is applicable.

Apply correct line voltage to the unit. Power to the unit must be sized correctly. Branch circuit overcurrent protection must be provided per local codes. See the nameplate for correct ratings.

All 208-230V single-phase units are factory wired for 230 volt operation. For 208 V operation the L1 wire connection to the unit transformer (found in the main control box) must be changed. The L1 wire must be disconnected from the 230 V (orange) wire and connected to the 208 V (red) wire. The 230 V wire must then be capped off with a wire nut or male terminal as appropriate. Please refer to the unit wiring diagram.

Operating Voltages

Operating voltages are as follows (+/– 10%).

- 115/60/1
- 208-230/60/1
- 265-277/60/1

Note: Voltages listed are to show voltage range. However, units operating with overvoltage and undervoltage for extended periods of time will experience premature component failure.

Thermostat and Controls

⚠ DANGER

READ THE INSTRUCTIONS INCLUDED WITH THE THERMOSTAT/CONTROL CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE IT.

Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/ OR PROPERTY DAMAGE.

To avoid electrical shock or damage to equipment, disconnect power before installing or servicing. Use only wiring with insulation rated for full thermostat operating voltage. Use copper wire only. Insulate or wirenut all un-used leads. Any wiring, including the remote probe,may carry the full operating voltage of the thermostat.

To avoid potential fire and/ or explosion do not use in potentially flammable or explosive atmospheres.

Retain the installation instructions for future reference. You must review your application and national and local codes to ensure that your installation will be functional and safe.

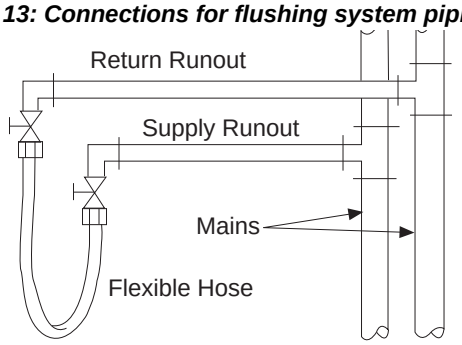
After wiring and installation are complete, energize the system and check the operation. Adjust the thermostat as necessary to complete at least one cycle. Be sure the thermostat and all other equipment are functioning correctly.

Initial Startup

Cleaning & Flushing the Water System

1. Prior to first operation of any unit, clean and flush the water circulating system of all construction dirt and debris.
2. If units are equipped with water shutoff valves, either electric or pressure operated, connect the supply and return runouts together at each unit location. This will prevent the introduction of dirt into the unit. See Figure 13.

Figure 13: Connections for flushing system piping



3 Fill the system at the city water makeup connection with all air vents open. After filling, close all air vents.

4 Start the main circulator with the pressure reducing valve open.

5 Check vents in sequence to bleed off any trapped air, ensuring circulation through all components of the system.

6 While circulating water, check and repair any leaks in the unit and surrounding piping.

⚠ CAUTION

Units must be checked for water leaks upon initial water system startup. Water leaks may be a result of mishandling or damage during shipping. Failure by the installing contractor to check for leaks upon start-up of the water system could result in property damage

7 Drains at the lowest point(s) in the system should be opened for initial flush and blow-down, making sure city water fill valves are set to make up water at the same rate.

8 Check the pressure gauge at pump suction and manually adjust the makeup to hold the same positive steady pressure both before and after opening the drain valves.

9 Flush should continue for at least two hours or longer until the drain water is clean and clear.

10 Shut off the circulator pump and open all drains and vents to completely drain down the system.

11 Short-circuited supply and return run outs should now be connected to the unit supply and return connections. Do not use sealers at the swivel flare connections of hoses.

12 Refill the system with clean water.

13 Test the water using litmus paper for acidity, and treat as required to leave the water slightly alkaline (pH 7.5 to 8.5).

14 Antifreeze may also be added at this time. Use commercial grade antifreeze designed for HVAC systems only. Do not use automotive grade antifreeze. Antifreeze will have an effect on the performance of the unit.

15 Once the system has been filled with clean water and antifreeze (if used), precautions should be taken to protect the system from dirty water conditions.

⚠ IMPORTANT

It is Daikin's policy not to make recommendations on water treatment. It is the responsibility of the user to check that the water supply to the units is free of contaminants or corrosive agents, chemicals or minerals. The general contractor or owner should contact a local water treatment company regarding water treatment. A fouled water system will lead to premature component failure.

Operating Limits

This equipment is designed for indoor installation only. Sheltered locations such as attics, garages, etc., generally will not provide sufficient protection against extremes in temperature and/or humidity, and equipment performance, reliability, and service life may be adversely affected.

Venting Hydronic Coils

Hydronic coils require a vent, either manual or automatic, to release air from the unit. Primary coils on all Thinline fan coils come standard with a coil air vent. It is located on the piping side of the unit, above the coil connections. See Figure 14.

Secondary coils on ThinLine units are not equipped with an air vent, but one is included on all factory-supplied valve and piping packages. It is located on the pipe closest to the outlet coil connection. See Figure 14.

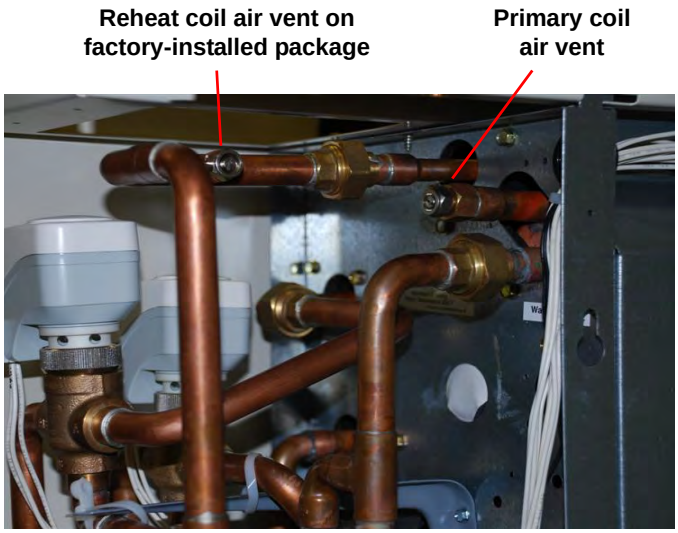
Perform the following steps to vent both primary and secondary coils after installing the unit.

1 Pressurize the building piping system with water and vent any trapped air at system vents.

2 For units with manual air vents, back the set screw out to expel air from the unit and then re-tighten the set screw.

3 Automotic air vents should require no adjustment for the coil to vent. However, if the coil does not vent immediately, unscrew the outer portion of the fitting to expel air from the port. If debris has become trapped in the vent, completely remove the outer portion of the fitting and clean.

Figure 14: Coil Air Vents



Controls

A wide variety of control options are available for ThinLine 3G Vertical Fan Coils, both unit-mounted and remote-mounted. This section provides a brief overview of these options and their operation. For more complete information, contact your Daikin representative.

Manual 4-Position Fan Switch

This four-position fan switch (Off, High, Med, Low) option, shown at the right, is available remote-mounted. It operates on low-voltage or line-voltage power and can be provided with a factory-mounted low-voltage interface board, which contains three-24 volt relays with line voltage contactors and terminal connections. The transformer is factory-installed and wired.

Sequence of operation

- *Off:* Fan is turned off. The motorized fresh-air damper, when supplied, is closed (see Fresh Air Damper, page 16).
- *High, Medium, Low:* Fan runs continuously at the selected speed. The two-position, motorized fresh-air damper, when supplied, is opened.

Unit-Mounted, Mechanical Thermostat With 4-Position Fan Switch

The unit-mounted option, shown at the right, combines the four-position fan switch with a mechanical thermostat. For two-pipe systems with a factory installed valve package, it can be provided with a manual switch (shown in picture to the right) to change from heating to cooling. Alternatively, the changeover can be automatic.

Sequence of operation

- Fan Switch
  - *Off:* Fan is turned off. The two-position, motorized fresh-air damper, when supplied, is closed (see Fresh Air Damper, page 16).
  - *High, Medium, Low:* Fan runs continuously at the selected speed. The two-position, motorized fresh-air damper, when supplied, is opened.
- Thermostat
  - Cycles the valve(s) open or closed on demand based on occupant-desired level.
- Changeover Switch: With a manual switch, the user selects whether heating or cooling is desired. With automatic changeover, a pipe sensor works with the thermostat to operate the heating or cooling valve.
  - *Heating:* Opens the valve when the temperature is below the setpoint.
  - *Cool:* Opens the valve when the temperature is above the setpoint.

Digital Thermostats

Daikin offers a broad range of unit-mounted and remote, wall-mounted digital thermostats with the capabililty to control On-Off, 3-wire and proportional modulating valves, and Normally Closed or Normally Open actuator valves. For more information, refer to the Daikin publication ED 18513-1 and ED 18527.

MT155 Thermostat

For more details refer to page 47. The MT155 series thermostat provides on-off control for low-voltage or line-voltage valves and fan motors. This thermostat is designed as a remote-mount with connection to the LV interface board mounted on the fan coil unit. Options include manual or automatic changeover and three-speed fan control for continuous or cycling fan operation. The thermostat may be mounted on units already at the job site. Each unit should be equipped with an LV Interface Board, if not, a Controls Mounting Kit PN910112080 needs to be ordered. For field installation instructions of the MT155 on a unit, refer to page 45.

Figure 15: MT155 Thermostats

Three standard control options are available:

- *On-Off fan cycle operation only:* The thermostat cycles the fan from the manually selected fan speed (high, medium or low) to off.
- *Continuous fan and On-Off valve cycle operation:* The thermostat cycles the valves on and off. The fan runs continuously at the manually selected fan speed.

- *On-Off fan and On-Off valve cycle operation:* The thermostat cycles the fan from the manually selected fan speed to off and it cycles the valves on and off.

When the system switch is in the OFF position, the fan coil system including the fan is shut off.

TA155: A HEAT-OFF-COOL system switch manually selects heating or cooling mode. In the HEAT position, only the heat output cycles with demand. In the COOL position, only the cool output cycles with demand. In the OFF position, heating and cooling outputs are off. Units with a two position system switch or without a system switch must use a load transfer switch when both heating and cooling outputs are used. This prevents control failure and equipment damage caused by direct cycling between loads.

TB155: An ON-OFF system switch enables auto-changeover of heating and cooling modes. In the ON position the thermostat activates heating or cooling outputs dependant upon the relationship between set point and ambient temperature. Heat on to cool on dead band is 4°F. In the OFF position, heating and cooling outputs are off. Units without a system switch cycle between heating and cooling with a 4°F dead band.

FAN: Some units have a switch for manual selection of fan speed. On these units fan operation is either internally wired for fan continuous operation or is dependant upon connection to the fan supply input . When internally wired for fan continuous operation, the fan will be off when the system switch is off. When dependant upon external connections the fan may not be off with the system switch in the off position. The fan supply input is switched to fan speed outputs (HI-MED-LO).

MT158 and MT168 Thermostat-Controllers with Digital Display

For more details refer to page 51, 55 or 59. Series MT158 and MT168 microprocessor-based thermostat-controllers combine a proportional integral control algorithm with adaptive logic. They may be unit-mounted or remote-wall mounted.

Figure 16: MT158 and MT168 Thermostats

Heating and cooling outputs for the MT158 are individually configurable for three-wire floating control valves or On/Off valves in the Normally Open or Normally Closed modes.

Heating and cooling outputs for the MT168 provide 0-10 Vdc or 4-20 mA for proportional modulating valve control. The integrated, three-speed fan control switch is line voltage to allow direct connection to the fan motors. Manual or automatic changeover is provided with remote setback capability from a time clock or facility management system. Features include a Fahrenheit or Celsius digital display and a built-in purge cycle which assists the controller to determine if the system is supplying hot water or cooling.

Two standard control options are available:

- *Continuous fan and modulating (or On-Off) valve operation:* The fan runs continuously at the manually selected fan speed (high, medium or low). The controller modulates the valves or, on the MT158, dip-switches can be set to cycle the valves on and off.
- *On-Off fan cycle operation and modulating (or On-Off) valve operation:* The controller cycles the fan from the manually selected fan speed to off. The controller modulates the valves or, on the MT158, dip-switches can be set to cycle the valves on and off.

T170 Thermostat with Digital Display

Two thermostats are offered for remote installation only: TA170 for three-speed fan control and TB170 for staged fan operation. Both thermostats are used for On-Off control of low- or line-voltage valves with auto changeover. Detailed installation instructions and modes of operation can be found in page 63.

Figure 17: T170 Thermostat with Digital Display

Low-Voltage (LV) Interface Board

The low-voltage interface board is used with any remote (wall mounted) Daikin thermostat or control. It can also be used in conjunction with a controller of a building automation system (BAS) control where low voltage is needed to operate the fan coil. It is located in the control box for the unit (see Figure 11, page 10).

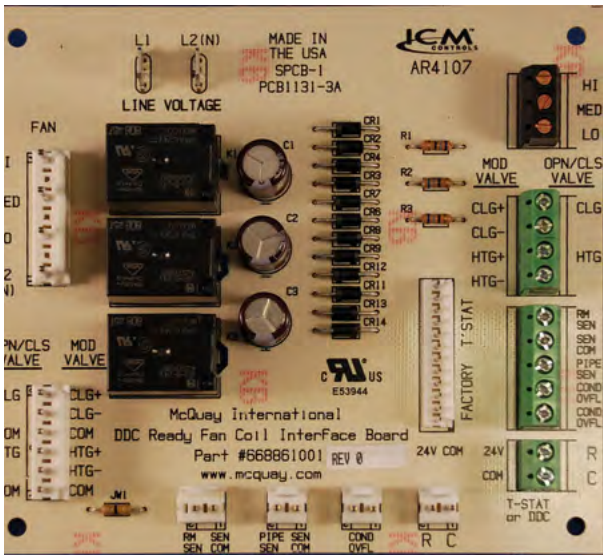
The LV interface board includes:

- Three 24-volt relays with line-voltage contactors to operate the fan motor speeds.
- Terminal connections for interfacing to:
  - An optional remote-mounted thermostat.
  - Low-voltage actuators for heating and cooling valves.
  - A return air sensor.
  - A pipe temperature sensor for changeover from heating to cooling on two-pipe systems.
- A factory-wired and installed transformer.

See Figure 18 for a list of connecting points to the board. For additional wiring information, see the typical wiring diagram Figure 37, page 28 or the unit's wiring diagram, which is attached to the corner panel on cabinet units and to the chassis front cover on hideaway units. (see Figure 12, page 11).

For instructions on field-mount MT155 thermostats on units supplied with LV Interface boards (a typical arrangement for a 5-day Quick Ship Program), refer to page 45.

Figure 18: LV Interface Board 24 VAC connections



Low Voltage Fan motor control

Low-voltage valve actuators

Room air or return air temperature sensor

Pipe temperature sensor

Condensate overflow sensor

Remote thermostat 24 VAC power

Accessories

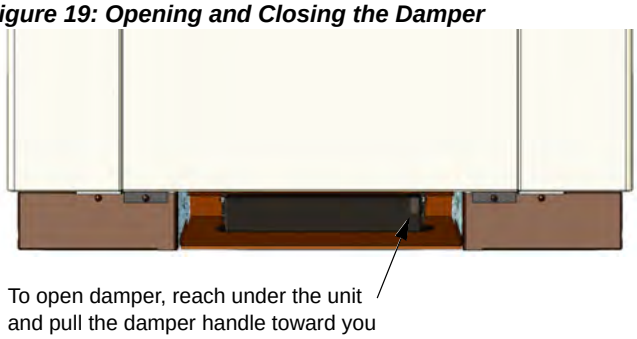
Fresh Air Damper

The fresh air damper kit provides up to 25% outside air to the unit heater. It consists of an intake with damper blade and insect screen. The damper may be manually controlled through the return air opening or with an optional field-installed damper motor. For detailed installation information, refer to page 37.

Operation

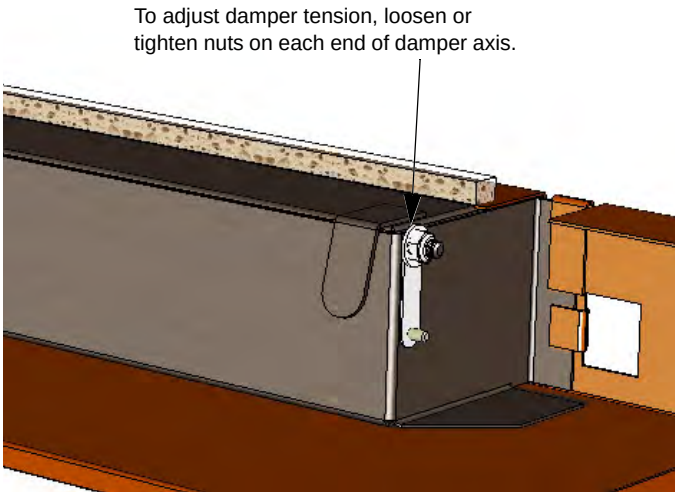
To open the damper, reach under the unit and pull the damper handle toward you. To close, push the damper away from you. See Figure 19.

Figure 19: Opening and Closing the Damper



If the damper is difficult to open or moves too freely, you can adjust the tension by tightening or loosening the nuts on its pivot axis. See Figure 20.

Figure 20: Adjusting Damper Tension



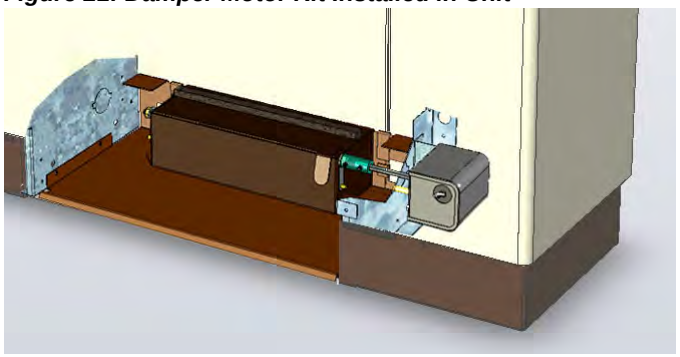
Cold Weather Operation

Unit heaters may experience erratic operation during cold ambient conditions with the outside air damper in the open position.

Fresh Air Damper Motor Kit (Low Voltage)

This damper motor kit is for field installation with the fresh air damper kit. The damper kit must be ordered separately. For detailed installation instructions, refer to page 39, which is supplied with the damper motor kit. Under most control schemes, the damper motor is set up to open the damper automatically whenever the unit fan is in operation.

Figure 21: Damper Motor Kit Installed in Unit



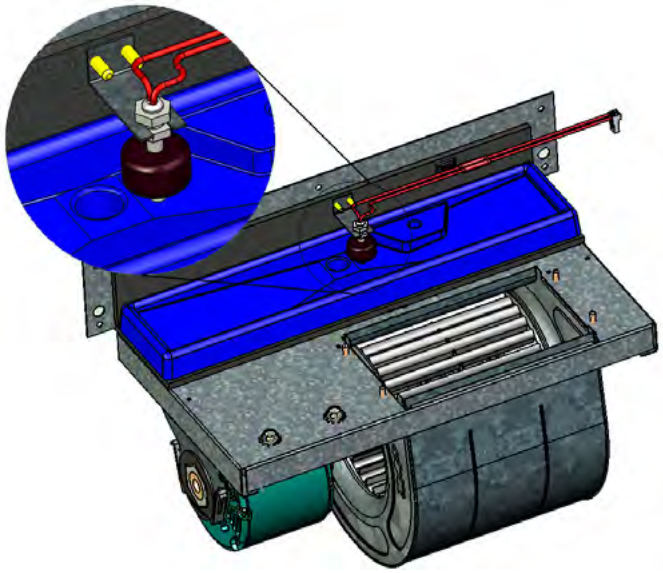
Condensate Overflow Detection Device

The condensate overflow detection device is a factory-installed option on fan coils. This device has a condensate overflow floater with dry contacts and is connected to the LV interface board. See Figure 22.

If you suspect it is not working properly, check to be sure that the float is installed straight up with the proper elevation. See Accessing/removing the main drain pan and motor assembly, page 19 for instructions on removing the main drain pan to access the device.

The condensate overflow switch needs to be wired to the proper controller (T170 for example) to shut off the fan if water is present in the drain pan.

Figure 22: Condensate Overflow Switch Installation



Leveling Legs Option

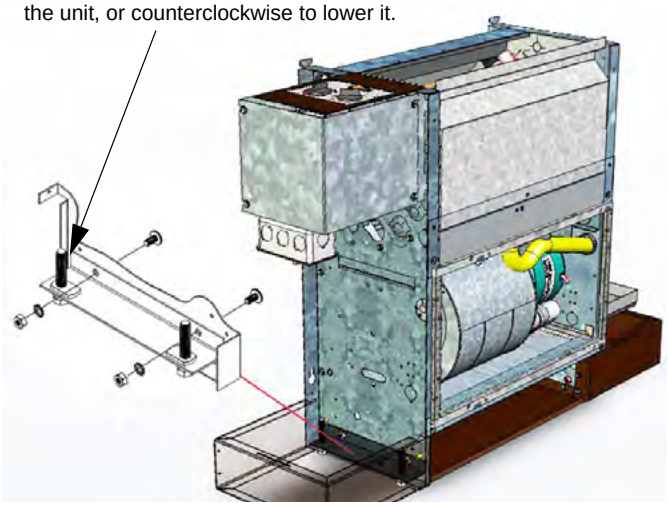
Field or factory-installed kits are available with 0” to 1" adjustment for positive leveling of floor-mounted units.

Height Adjustment

To adjust the height of a leveling leg:

1. Loosen the locking nut on the leveling leg bolt with a 9/16-inch wrench.
2. Turn the leveling leg bolt clockwise to lower the unit or counterclockwise to raise it.
3. When you are finished adjusting the height, hold the leveling leg bolt in place and draw the locking nut up tight against the mounting bracket.

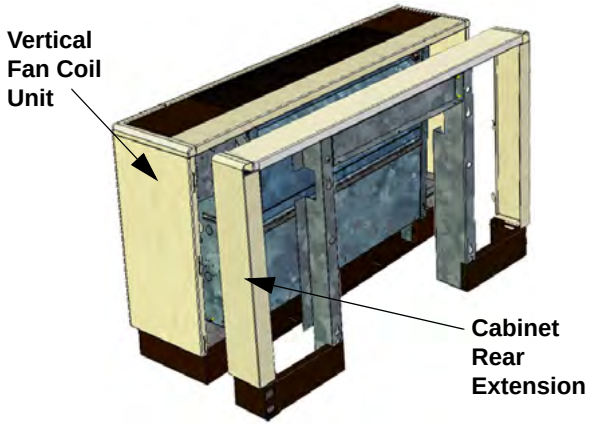
Figure 23: Leveling Legs Adjustment


To adjust height, loosen the locking nut with a 9/16” wrench. Then, turn the leveling leg bolt head clockwise to raise the unit, or counterclockwise to lower it.

Cabinet Rear Extension Kit

The field-installed cabinet rear extension option may be utilized to place the fan coil farther out from the wall than the standard unit allows. Refer to page 41 for more details.

Figure 24: Cabinet Rear Extension Kit



Electric Heat Over-Temp Reset Button

The elecric heat options comes with two over-temperature switches. The first resets automatically when the over-temperature condition no longer exists. The second, backup switch must be reset manually.

Note: The need to reset the manual switch may indicate that there are improperly functioning system components. If the switch trips again, contact Daikin Factory Service for help in diagnosing the cause.

To reset the manual switch, carry out the following steps:

1. Disconnect all power to the unit. Verify the power has been disconnected.

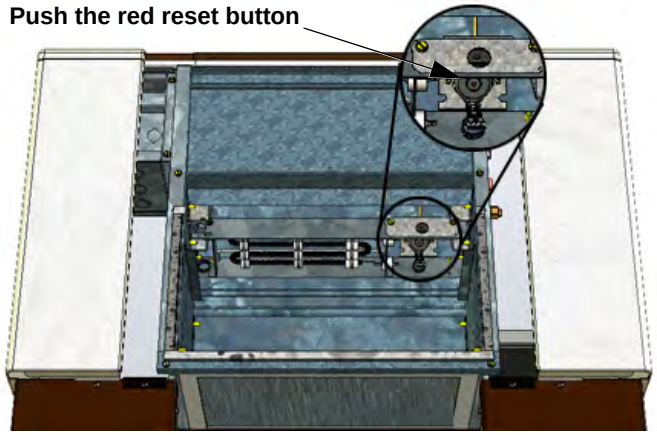
⚠ DANGER

Personal Injury Hazard.

Power supply can cause electrical shock. Always disconnect power to unit before servicing.

2. Remove the main drain pan and motor assembly from the unit (see Accessing/removing the main drain pan and motor assembly, page 19).
3. Access and push in the red reset button. See Figure 25.

Figure 25: Electric Heat Over-Temp Reset Button Location

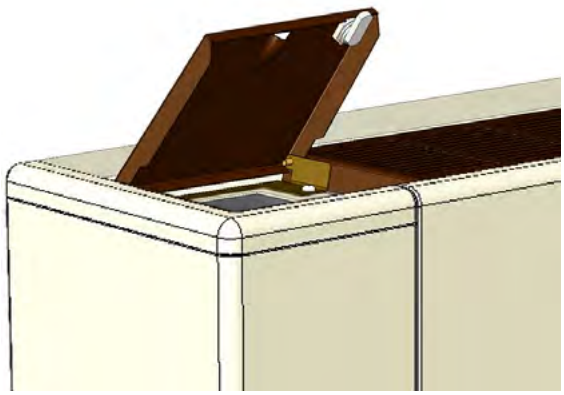


4. Reinstall the drain pan and motor assembly.
5. Reconnect the power.

Key-lock Access Door Kit

The key-lock access door kit (see Figure 26) can be installed on ThinLine 3G cabinet units to prevent access to unit controls. For detailed installation information, refer to page 43.

Figure 26: Key-Lock Access Door Kit



General Maintenance

Normal maintenance on all units is generally limited to filter changes and cleaning the condensate drain pans. Units are provided with permanently lubricated motors and require no oiling even though oil caps may be provided.

Record performance measurements of volts, amps, and water temperature differences (both heating and cooling). A comparison of logged data with start-up and other annual data is useful as an indicator of general equipment condition.

Filter Changes

Filter changes are required at regular intervals. The time period between changes will depend upon the project requirements. Some applications, such as motels, produce a lot of lint from carpeting and linen changes, and will require more frequent filter changes. Check filters at 60-day intervals for the first year until experience is acquired. If light cannot be seen through the filter when held up to sunlight or a bright light, it should be changed. A more critical standard may be desirable.

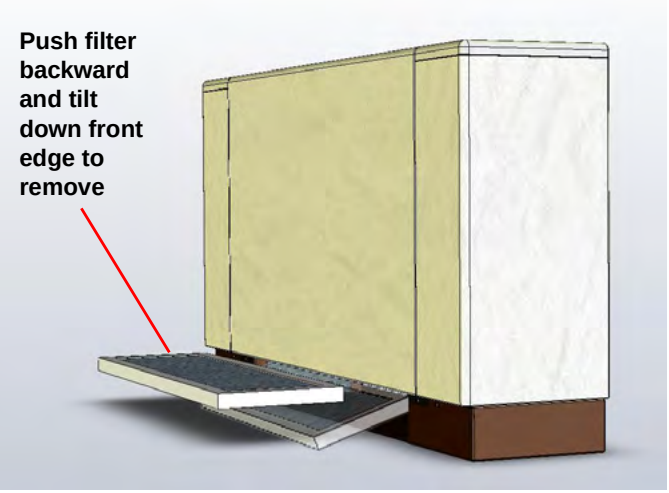
Filters can be removed without removing any panels. See Figure 27. However, if the unit is equipped with a return air grille, this must first be removed to access the filter. To remove the filter:

1. Slide your hands under the front opening on the bottom of the unit and feel for the filter above.
2. Slide your fingers along the bottom of the filter until they reach the rear paperboard edge.
3. Push the paperboard edge backward about a half-inch until the front edge of the filter drops down.
4. Remove the filter from under the unit.

To install a new filter:

1. Slide the filter under the unit and tilt its rear 0edge upward and into the pocket at the rear of the filter housing.
2. Push the front edge of the filter backward until it clears the front lip on the filter housing, then push it up and into place.

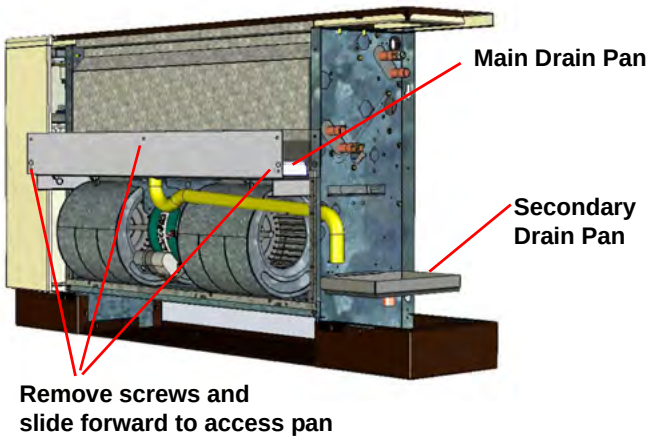
Figure 27: Filter Removal



Condensate Drain Pans

The main and secondary condensate drain pans should be checked annually and cleaned and flushed as required. See Figure 28.

Figure 28: Drain Pan Locations



Accessing the secondary drain pan

To access the secondary drain pan, remove the corner panel from the side of the unit where the main piping connections are made (this is opposite the side where the control access panel is located on units with unit-mounted controls. See Figure 5, page 6 for a description of how to remove it.

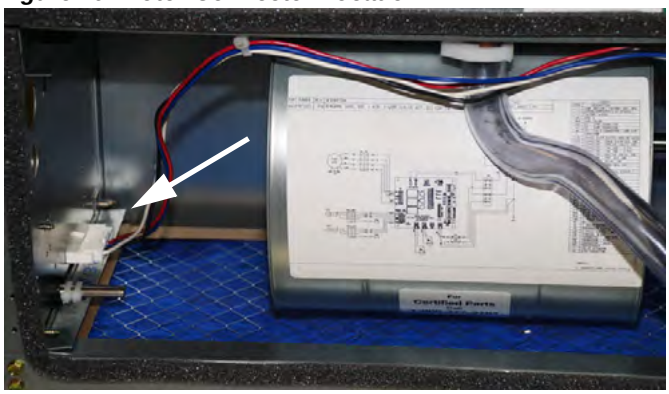
Accessing/removing the main drain pan and motor assembly

The main drain pan is housed in the top of the unit's fan deck. Both the fan deck and the main condensate drain pan are easily removed for access and cleaning as follows.

1. Disconnect electrical power to the unit.
2. Remove the two screws that attach the center panel of the unit to the base (see Figure 5, page 6).
3. Lift the center panel upward and off the unit.
4. Pull the main condensate drain line out of the side of the chassis where it flows into the secondary drain pan.
5. Disconnect the fan motor wiring harness by removing the plug where it attaches to the connector on the side of the chassis. See Figure 29.

Note: Push the tabs inward on the sides of the plug to free it from the connector base.

Figure 29: Motor Connector Location



6. Remove the screws that attach the fan deck to the unit chassis. See Figure 28
7. Firmly grasp the fan deck, then slide it towards you and out of the unit.
8. The main condensate drain pan sits atop the fan deck and is now easily accessed for cleaning.
9. To reinstall, follow these steps in reverse order.

Physical Data

Unit Data

Table 1: Unit Data

	02	03	04	06	08	10	12
Primary Coil Data							
Face Area, ft^2 (cm^2)	0.74 (685)	1.08 (1004)	1.43 (1323)	2.11 (1962)	2.46 (2281)	3.14 (2917)	3.83 (3559)
Fins/inch (cm)	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]
Coil Connection	1/2" Nominal copper female (5/8" OD)						
Coil Dimensions							
2-Row L x D x H, in (cm)	11.8 x 1.7 x 9 (30.0x4.4x22.9)	17.3 x 1.7 x 9 (43.9x4.4x22.9)	22.8 x 1.7 x 9 (57.9x4.4x22.9)	33.8 x 1.7 x 9 (85.9x4.4x22.9)	39.3x 1.7 x 9 (99.8x4.4x22.9)	50.2 x 1.7 x 9 (127.6x4.4x22.9)	61.3 x 1.7 x 9 (155.7x4.4x22.9)
3-Row L x D x H, in (cm)	11.8 x 2.6 x 9 (30x6.6x22.9)	17.3 x 2.6 x 9 (43.9x6.6x22.9)	22.8 x 2.6 x 9 (57.9x6.6x22.9)	33.8 x 2.6 x 9 (85.9x6.6x22.9)	39.3 x 2.6 x 9 (99.8x6.6x22.9)	50.2 x 2.6 x 9 (127.6x6.6x22.9)	61.3 x 2.6 x 9 (155.7x6.6x22.9)
4-Row L x D x H, in (cm)	11.8 x 3.5 x 9 (30.0x8.8x22.9)	17.3 x 3.5 x 9 (43.9x8.8x22.9)	22.8 x 3.5 x 9 (57.9x8.8x22.9)	33.8 x 3.5 x 9 (85.9x8.8x22.9)	39.3 x 3.5 x 9 (99.8x8.8x22.9)	50.2 x 3.5 x 9 (127.6x8.8x22.9)	61.3 x 3.5 x 9 (155.7x8.8x22.9)
Coil Volume, Gal (Liters)							
2-Row	0.15 (0.6)	0.19 (0.7)	0.24 (0.9)	0.32 (1.2)	0.37 (1.4)	0.46 (1.7)	0.55 (2.1)
3-Row	0.20 (0.7)	0.26 (1.0)	0.32 (1.2)	0.45 (1.7)	0.52 (2.0)	0.64 (2.4)	0.77 (2.9)
4-Row	0.26 (1.0)	0.34 (1.3)	0.43 (1.6)	0.61 (2.3)	0.70 (2.6)	0.87 (3.3)	1.05 (4.0)
Reheat Coil Data: 1-Row, Hot Water or Steam							
Face Area, ft^2 (cm^2)	0.49 (456)	0.72 (669)	0.95 (882)	1.41 (1308)	1.64 (1521)	2.09 (1944)	2.55 (2372)
Fins/inch (cm)	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]
Coil Connection	1/2" Nominal copper female (5/8" OD)						
L x D x H, in (cm)	11.8 x 0.9 x 6 (30.0x2.2x15.2)	17.3 x 0.9 x 6 (43.9x2.2x15.2)	22.8 x 0.9 x 6 (57.9x2.2x15.2)	33.8 x 0.9 x 6 (85.9x2.2x15.2)	39.3 x 0.9 x 6 (99.8x2.2x15.2)	50.2 x 0.9 x 6 (127.6x2.2x15.2)	61.3 x 0.9 x 6 (155.7x2.2x15.2)
Volume, Gal (Liters)	0.04 (0.1)	0.05 (0.2)	0.07 (0.3)	0.10 (0.4)	0.11 (0.4)	0.14 (0.5)	0.17 (0.7)
Preheat Coil Data, 2-Row, Hot Water or Steam							
Hot Water or Steam							
Face Area, ft^2 (cm^2)	0.49 (456)	0.72 (669)	0.95 (882)	1.41 (1308)	1.64 (1521)	2.09 (1944)	2.55 (2372)
Fins/inch (cm)	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]
Coil Connection	1/2" Nominal copper female (5/8" OD)						
L x D x H, in. (cm)	11.8 x 1.7 x 6 (30.0x4.4x15.2)	17.3 x1.7 x 6 (43.9x4.4x15.2)	22.8 x 1.7 x 6 (57.9x4.4x15.2)	33.8 x 1.7 x 6 (85.9x4.4x15.2)	39.3 x 1.7 x 6 (99.8x4.4x15.2)	50.2 x 1.7 x 6 (127.6x4.4x15.2)	61.3 x 1.7 x 6 (155.7x4.4x15.2)
Volume, Gal (Liters)	0.08 (0.3)	0.10 (0.4)	0.13 (0.5)	0.19 (0.7)	0.22 (0.8)	0.29 (1.1)	0.35 (1.3)
Fan/Motor Data							
Fan Quantity	1	1	2	2	3	4	4
Size, Dia" x W" (cm)	6.26 x 6.3 (15.9 x 16)	7.95 x 6.3 (20 x 16)	6.26 x 6.3 (15.9 x 16)	7.95 x 6.3 (20 x 16)	6.26 x 6.3 (15.9 x 16)	6.26 x 6.3 (15.9 x 16)	7.95 x 6.3 (20 x 16)
Motor Quantity	1	1	1	1	2	2	2
Filter Data							
Part Number	668332901	668332902	668332903	668332907	668332905	668332906	668332904
1" (25.4 cm) Media	TA only	TA only	TA only	TA only	TA only	TA only	TA only
Quantity	1	1	1	1	2	2	2
L x D x H, in. (cm)	16 x 8.75 x 1 (40.6 x 22 x 2.5)	21.5 x 8.75 x 1 (54.6 x 22 x 2.5)	27 x 8.75 x 1 68.5 x 22 x 2.5	38 x 8.75 x 1 (96.5 x 22 x 2.5)	21.7 x 8.75 x 1 (56.1 x 22 x 2.5)	27.2 x 8.75 x 1 (69.0 x 22 x 2.5)	32.7 x 8.75 x 1 (83.1 x 22 x 2.5)

Shipping Weights

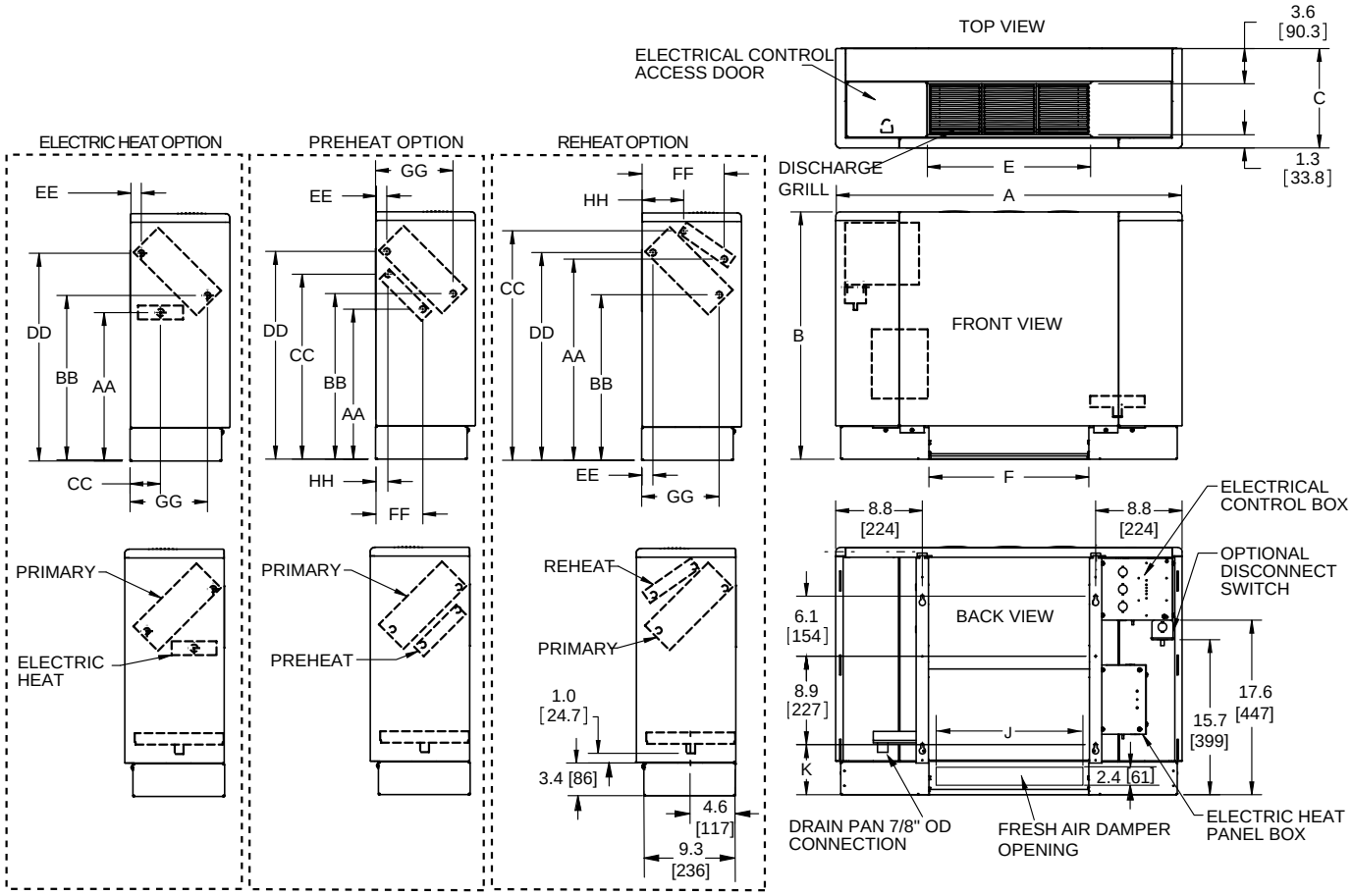
Table 2: Approximate Shipping Weights - lbs (kg)*

Unit Type	Unit Size						
	S02	S03	S04	S06	S08	S10	S12
FCVC,FCVS	84 (38)	95 (43)	108 (49)	131 (60)	152 (69)	177 (80)	202 (92)
FCVH	55 (25)	63 (29)	74 (34)	91 (41)	110 (50)	129 (59)	149 (68)

Note: *Approximate shipping weights do not include valve packages, hot water coils, electric heaters or other options.

Unit Dimensions

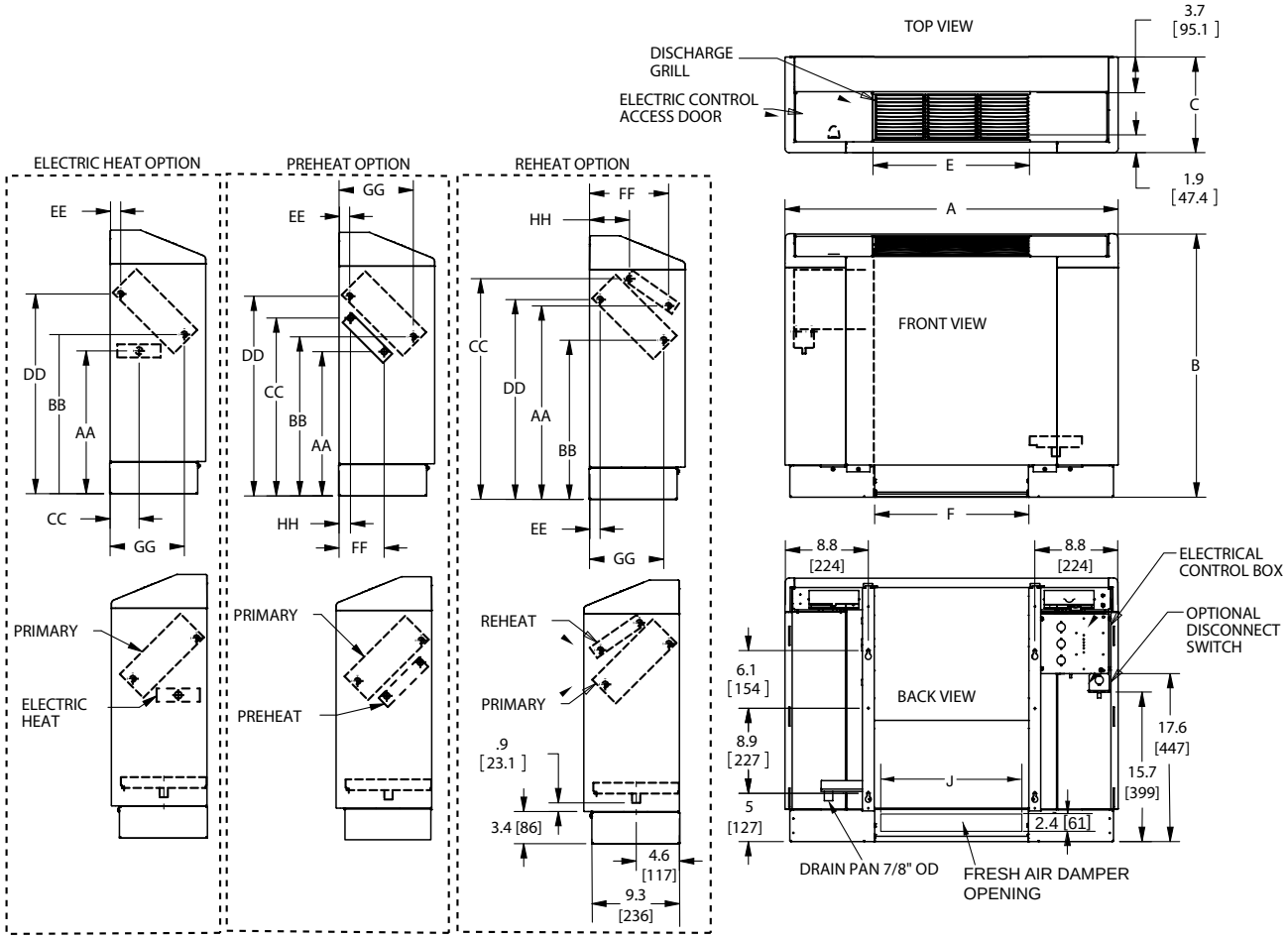
Figure 30: Dimensions: Flat Top Fan Coils



Dimension		S02		S03		S04		S06		S08		S10		S12	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
Unit Width	A	35.0	889	40.5	1029	46.0	1168	57.0	1448	62.5	1588	73.5	1867	84.5	2146
Unit Height	B	25.0	635	25.0	635	25.0	635	25.0	635	25.0	635	25.0	635	25.0	635
Unit Depth	C	10.0	254	10.0	254	10.0	254	10.0	254	10.0	254	10.0	254	10.0	254
Discharge Grille - Width	E	16.3	414	21.8	554	27.3	693	38.3	973	43.8	1113	54.8	1392	65.8	1671
Return Air Opening - Width	F	16.2	411	21.7	551	27.2	691	38.2	970	43.7	1110	54.7	1389	65.7	1669
Electric Heat Connection	AA	15.1	384	15.1	384	15.1	384	15.1	384	15.1	384	15.1	384	15.1	384
	CC	3.0	76	3.0	76	3.0	76	3.0	76	3.0	76	3.0	76	3.0	76
Primary Coil - Water Return	DD	21	533	21	533	21	533	21	533	21	533	21	533	21	533
	EE	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28
Primary Coil - Water Supply	BB	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424
	GG	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198
Preheat Coil - Water Return	CC	18.7	475	18.7	475	18.7	475	18.7	475	18.7	475	18.7	475	18.7	475
	HH	1.2	30	1.2	30	1.2	30	1.2	30	1.2	30	1.2	30	1.2	30
Preheat Coil - Water Supply	AA	15	381	15	381	15	381	15	381	15	381	15	381	15	381
	FF	4.7	119	4.7	119	4.7	119	4.7	119	4.7	119	4.7	119	4.7	119
Reheat Coil - Water Return	CC	23.2	589	23.2	589	23.2	589	23.2	589	23.2	589	23.2	589	23.2	589
	HH	4.2	107	4.2	107	4.2	107	4.2	107	4.2	107	4.2	107	4.2	107
Reheat Coil - Water Supply	AA	20.3	516	20.3	516	20.3	516	20.3	516	20.3	516	20.3	516	20.3	516
	FF	8.3	211	8.3	211	8.3	211	8.3	211	8.3	211	8.3	211	8.3	211

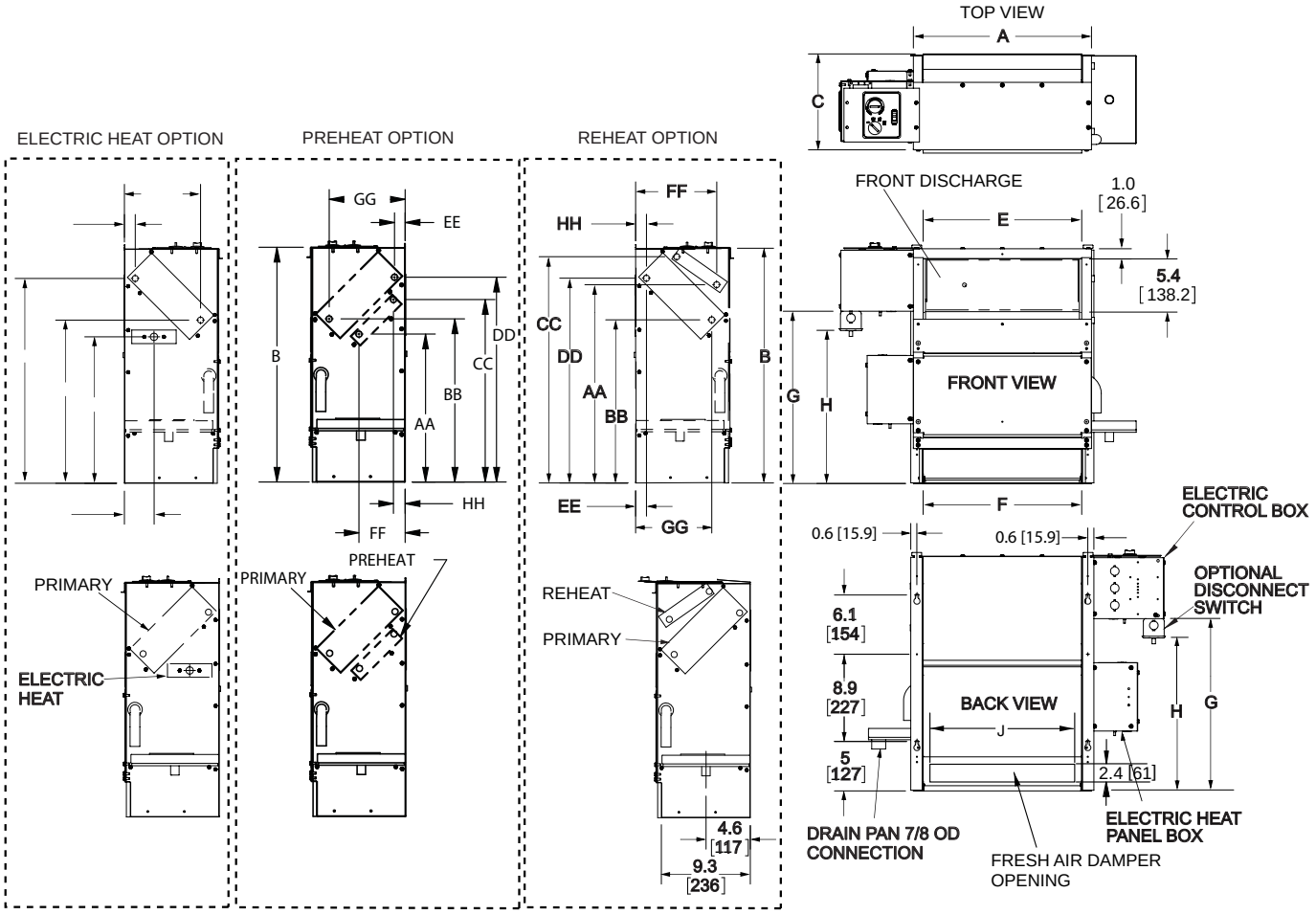
Physical Data

Figure 31: Dimensions: Slope Top Fan Coils



Dimension		S02		S03		S04		S06		S08		S10		S12	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
Unit Width	A	35.0	889	40.5	1029	46.0	1168	57.0	1448	62.5	1588	73.5	1867	84.5	2146
Unit Height	B	27.6	701	27.6	701	27.6	701	27.6	701	27.6	701	27.6	701	27.6	701
Unit Depth	C	10.0	254	10.0	254	10.0	254	10.0	254	10.0	254	10.0	254	10.0	254
Discharge Grille - Width	E	16.3	414	21.8	554	27.3	693	38.3	973	43.8	1113	54.8	1392	65.8	1671
Return Air Opening - Width	F	16.2	411	21.7	551	27.2	691	38.2	970	43.7	1110	54.7	1389	65.7	1669
Electric Heat Connection	AA	15.1	384	15.1	384	15.1	384	15.1	384	15.1	384	15.1	384	15.1	384
	CC	3.0	76	3.0	76	3.0	76	3.0	76	3.0	76	3.0	76	3.0	76
Primary Coil - Water Return	DD	21	533	21	533	21	533	21	533	21	533	21	533	21	533
	EE	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28
Primary Coil - Water Supply	BB	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424
	GG	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198
Preheat Coil - Water Return	CC	18.7	475	18.7	475	18.7	475	18.7	475	18.7	475	18.7	475	18.7	475
	HH	1.2	30	1.2	30	1.2	30	1.2	30	1.2	30	1.2	30	1.2	30
Preheat Coil - Water Supply	AA	15	381	15	381	15	381	15	381	15	381	15	381	15	381
	FF	4.7	119	4.7	119	4.7	119	4.7	119	4.7	119	4.7	119	4.7	119
Reheat Coil - Water Return	CC	23.2	589	23.2	589	23.2	589	23.2	589	23.2	589	23.2	589	23.2	589
	HH	4.2	107	4.2	107	4.2	107	4.2	107	4.2	107	4.2	107	4.2	107
Reheat Coil - Water Supply	AA	20.3	516	20.3	516	20.3	516	20.3	516	20.3	516	20.3	516	20.3	516
	FF	8.3	211	8.3	211	8.3	211	8.3	211	8.3	211	8.3	211	8.3	211

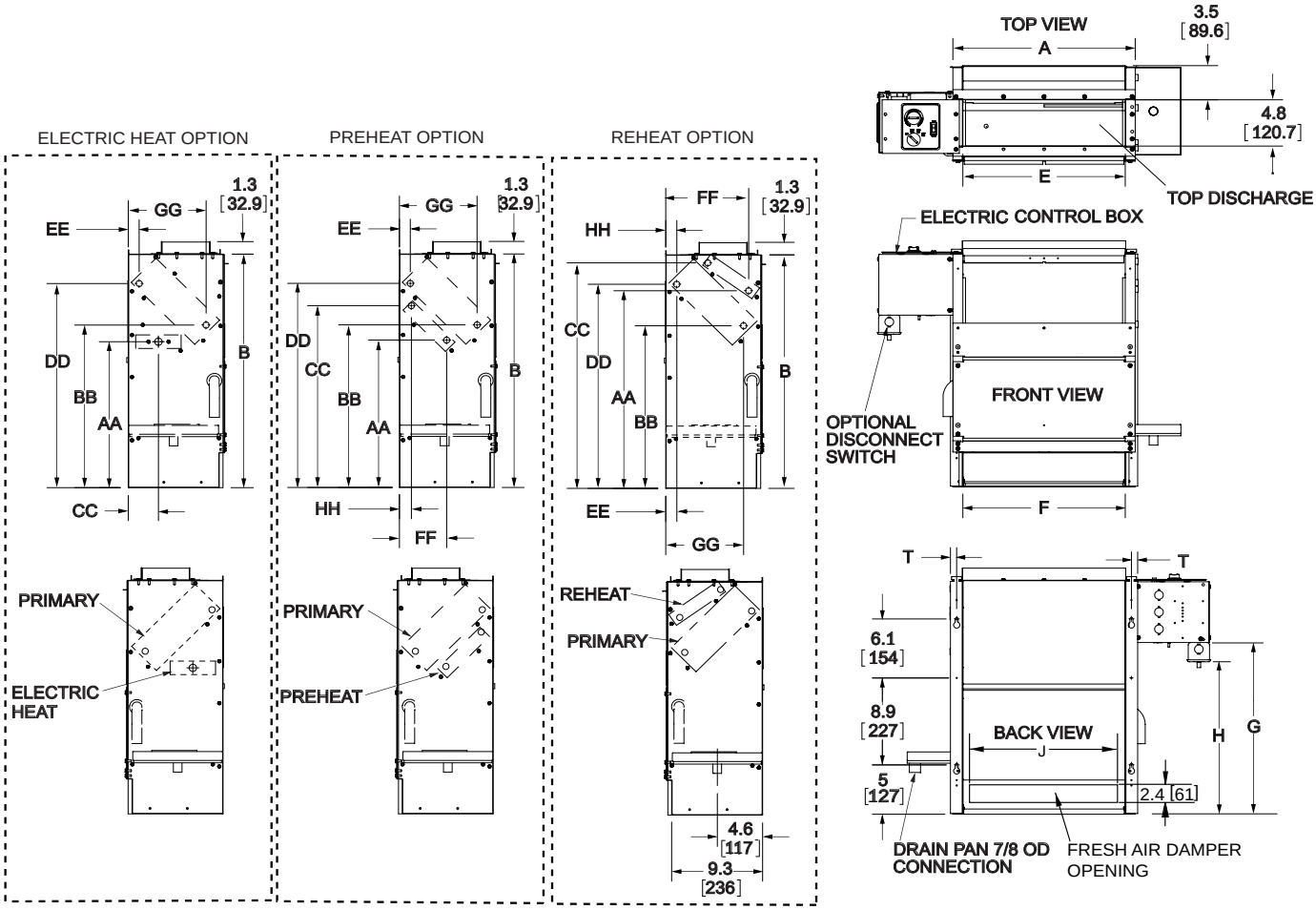
Figure 32: Dimensions: Hideaway, Front-Discharge Fan Coils



Dimension		S02		S03		S04		S06		S08		S10		S12	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
Unit Width	A	18.8	475	24.3	617	29.8	757	40.8	1036	46.3	1176	57.3	1455	68.3	1735
Unit Height	B	24.0	610	24.0	610	24.0	610	24.0	610	24.0	610	24.0	610	24.0	610
Unit Depth	C	9.6	243	9.6	243	9.6	243	9.6	243	9.6	243	9.6	243	9.6	243
Discharge Grille - Width	E	16.3	414	21.8	554	27.3	693	38.3	973	43.8	1113	54.8	1392	65.8	1671
Return Air Opening - Width	F	16.2	411	21.7	551	27.2	691	38.2	970	43.7	1110	54.7	1389	65.7	1669
Control Box to Floor	G	17.6	447	17.6	447	17.6	447	17.6	447	17.6	447	17.6	447	17.6	447
Disconnect Switch to Floor	H	15.7	399	15.7	399	15.7	399	15.7	399	15.7	399	15.7	399	15.7	399
Electric Heat Connection	AA	15.1	384	15.1	384	15.1	384	15.1	384	15.1	384	15.1	384	15.1	384
	CC	3.0	76	3.0	76	3.0	76	3.0	76	3.0	76	3.0	76	3.0	76
Primary Coil - Water Return	DD	21	533	21	533	21	533	21	533	21	533	21	533	21	533
	EE	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28
Primary Coil - Water Supply	BB	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424
	GG	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198
Preheat Coil - Water Return	CC	18.7	475	18.7	475	18.7	475	18.7	475	18.7	475	18.7	475	18.7	475
	HH	1.2	30	1.2	30	1.2	30	1.2	30	1.2	30	1.2	30	1.2	30
Preheat Coil - Water Supply	AA	15	381	15	381	15	381	15	381	15	381	15	381	15	381
	FF	4.7	119	4.7	119	4.7	119	4.7	119	4.7	119	4.7	119	4.7	119
Reheat Coil - Water Return	CC	23.2	589	23.2	589	23.2	589	23.2	589	23.2	589	23.2	589	23.2	589
	HH	4.2	107	4.2	107	4.2	107	4.2	107	4.2	107	4.2	107	4.2	107
Reheat Coil - Water Supply	AA	20.3	516	20.3	516	20.3	516	20.3	516	20.3	516	20.3	516	20.3	516
	FF	8.3	211	8.3	211	8.3	211	8.3	211	8.3	211	8.3	211	8.3	211

Physical Data

Figure 33: Dimensions: Hideaway, Top-Discharge Fan Coils

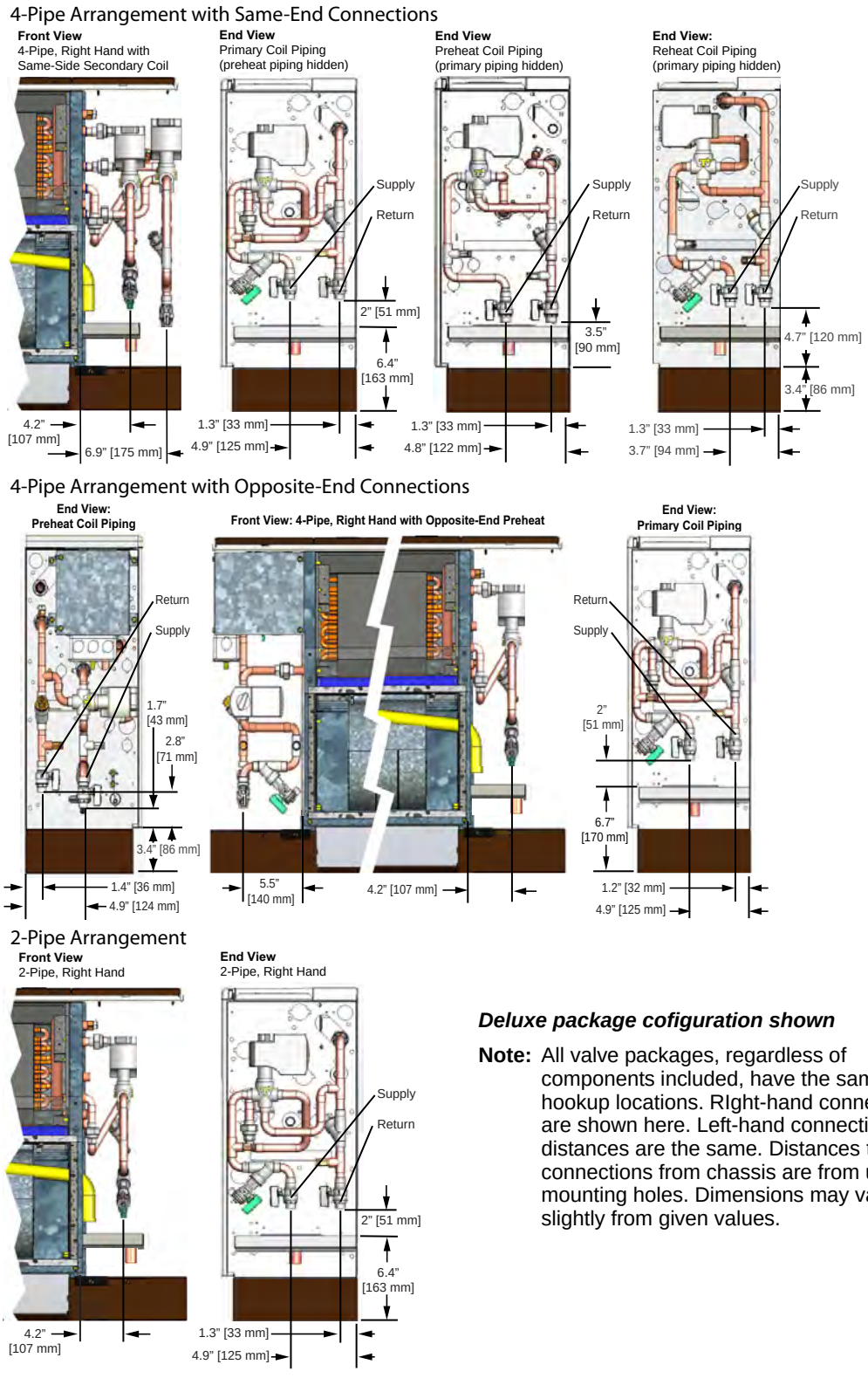


Dimension		S02		S03		S04		S06		S08		S10		S12	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
Unit Width	A	18.8	475	24.3	617	29.8	757	40.8	1036	46.3	1176	57.3	1455	68.3	1735
Unit Height	B	24.0	610	24.0	610	24.0	610	24.0	610	24.0	610	24.0	610	24.0	610
Unit Depth	C	9.6	243	9.6	243	9.6	243	9.6	243	9.6	243	9.6	243	9.6	243
Discharge Grille - Width	E	16.3	414	21.8	554	27.3	693	38.3	973	43.8	1113	54.8	1392	65.8	1671
Return Air Opening - Width	F	16.2	411	21.7	551	27.2	691	38.2	970	43.7	1110	54.7	1389	65.7	1669
Control Box to Floor	G	17.6	447	17.6	447	17.6	447	17.6	447	17.6	447	17.6	447	17.6	447
Disconnect Switch to Floor	H	15.7	399	15.7	399	15.7	399	15.7	399	15.7	399	15.7	399	15.7	399
Electric Heat Connection	AA	15.1	384	15.1	384	15.1	384	15.1	384	15.1	384	15.1	384	15.1	384
	CC	3.0	76	3.0	76	3.0	76	3.0	76	3.0	76	3.0	76	3.0	76
Primary Coil - Water Return	DD	21	533	21	533	21	533	21	533	21	533	21	533	21	533
	EE	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28
Primary Coil - Water Supply	BB	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424
	GG	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198
Preheat Coil - Water Return	CC	18.7	475	18.7	475	18.7	475	18.7	475	18.7	475	18.7	475	18.7	475
	HH	1.2	30	1.2	30	1.2	30	1.2	30	1.2	30	1.2	30	1.2	30
Preheat Coil - Water Supply	AA	15	381	15	381	15	381	15	381	15	381	15	381	15	381
	FF	4.7	119	4.7	119	4.7	119	4.7	119	4.7	119	4.7	119	4.7	119
Reheat Coil - Water Return	CC	23.2	589	23.2	589	23.2	589	23.2	589	23.2	589	23.2	589	23.2	589
	HH	4.2	107	4.2	107	4.2	107	4.2	107	4.2	107	4.2	107	4.2	107
Reheat Coil - Water Supply	AA	20.3	516	20.3	516	20.3	516	20.3	516	20.3	516	20.3	516	20.3	516
	FF	8.3	211	8.3	211	8.3	211	8.3	211	8.3	211	8.3	211	8.3	211

Factory-Installed Valve & Piping Packages

See catalog CAT 722-1 for detailed descriptions of piping packages.

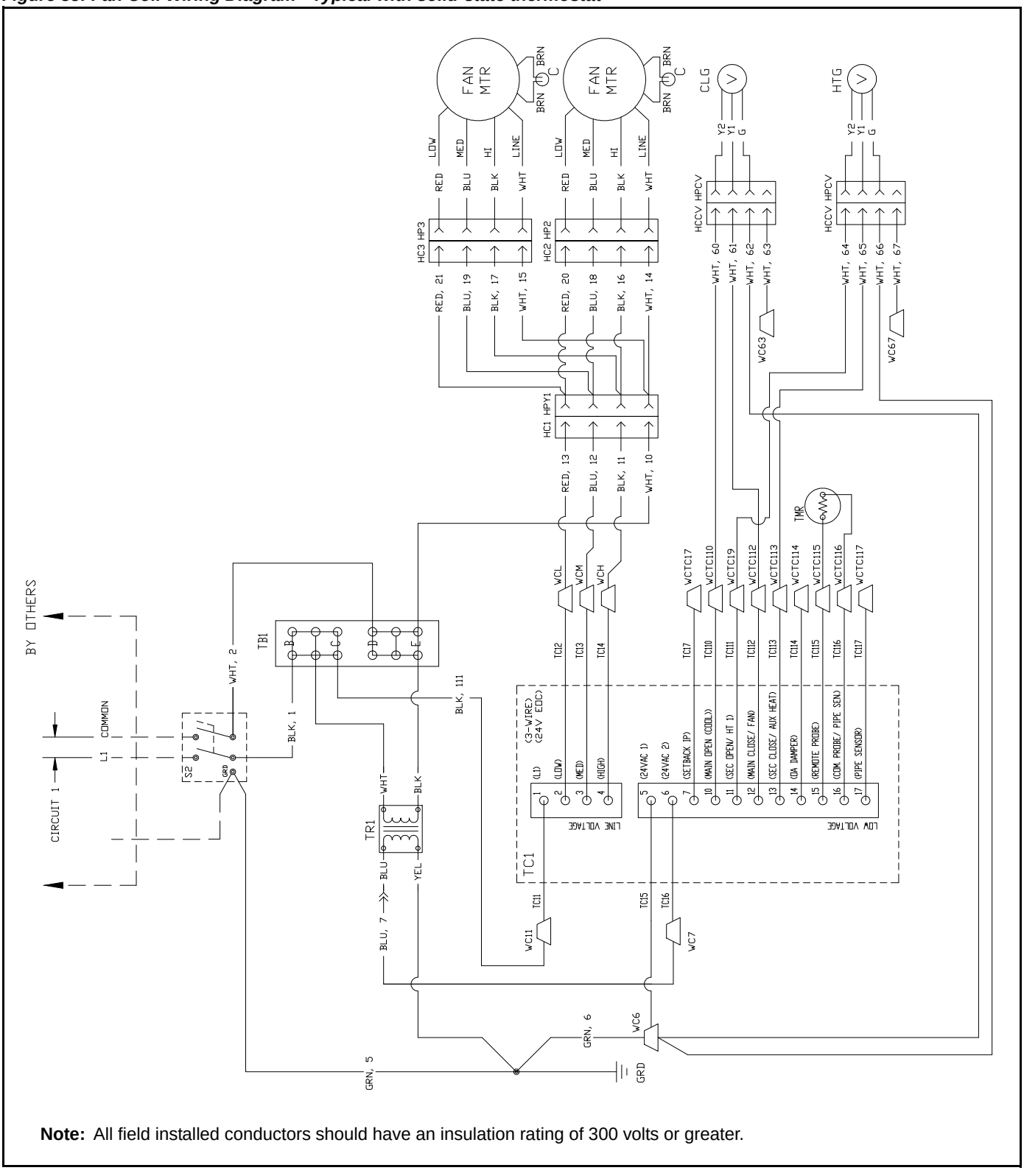
Figure 34: Hook Up Locations: Factory-installed Valve & Piping Packages



Deluxe package cofiguration shown

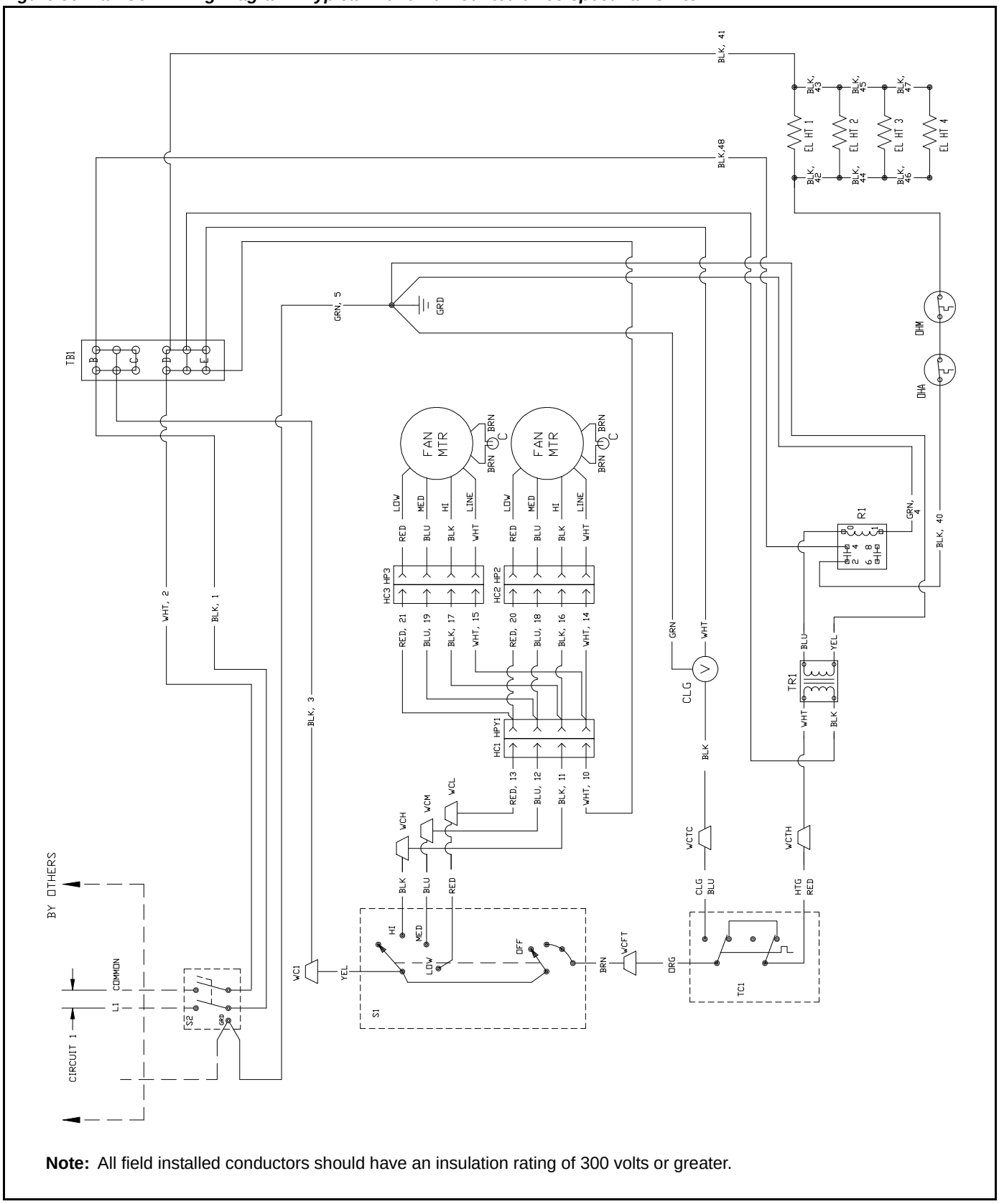
Note: All valve packages, regardless of components included, have the same hookup locations. RIght-hand connections are shown here. Left-hand connection distances are the same. Distances to connections from chassis are from unit mounting holes. Dimensions may vary slightly from given values.

Figure 35: Fan Coil Wiring Diagram - Typical with solid-state thermostat



Note: All field installed conductors should have an insulation rating of 300 volts or greater.

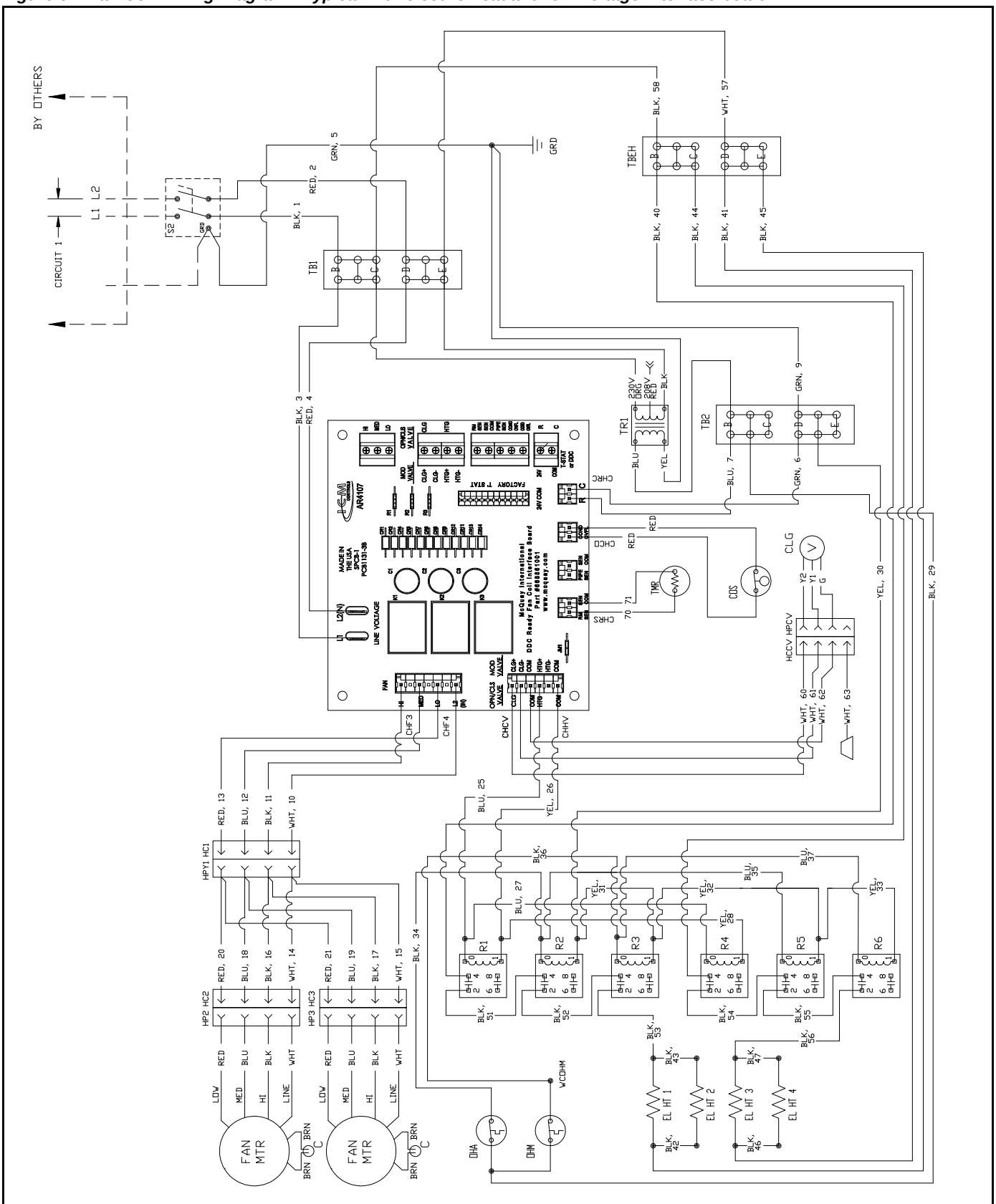
Figure 36: Fan Coil Wiring Diagram - Typical with unit-mounted three-speed fan switch



Note: All field installed conductors should have an insulation rating of 300 volts or greater.

Wiring Diagrams

Figure 37: Fan Coil Wiring Diagram - Typical with electric heat and low-voltage interface board



Note: All field installed conductors should have an insulation rating of 300 volts or greater.

Table 1: Model Number Description: Fields 1 - 21

Field	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Code	FC	VC	1	02	A	A	G	M	Y	YY	W	3	12	R	F	T	YY	12	Y	Y	N

1 Unit Type
- FC = fan coil
- FH = cabinet unit heater

2 Product Identifier
- VC = vertical cabinet, flat top
- VH = vertical hideaway
- VS = vertical cabinet, slope top
- WC = wall-hung cabinet

3 Design Series
- 1 = Design 1

4 Unit Size - nominal capacity
- 02 = 200 cfm
- 03 = 300 cfm
- 04 = 400 cfm
- 06 = 600 cfm
- 08 = 800 cfm
- 10 = 1000 cfm
- 12 = 1200 cfm
- 14 = 1400 cfm

5 Volts/Hertz/Phase
- A = 115/60/1
- E = 208-230/60/1
- J = 265-277/60/1

6 Coil fin type
- A = aluminum

7 Coil casing material
- G = galvanized

8 Coil air vent
- M = manual
- A = auto

9 Coil coating
- Y = none

10 Not currently used
- YY = none

11 Primary Coil Type
- C = chilled water only
- W = CW/HW 2-pipe
- H = hot water only
- S = steam

12 Primary Coil Rows
- 2 = 2 row
- 3 = 3 row
- 4 = 4 row

13 Primary Coil Fins Per Inch
- 12 = 12 fins per inch

14 Primary Coil Connection Hand
- L = left hand
- R = right hand

15 Primary Coil Piping Package
- F = factor installed
- L = shipped loose
- Y = none

16 Primary Coil Connection Type
- S = sweated
- T = threaded
- N = none

17 Preheat Coil Type
- E1 = electric single stage
- W1 = 1-row water
- W2 = 2-row water
- S1 = 1-row steam
- S2 = 2-row steam
- YY = none

18 Preheat Coil Fins Per Inch
- 12 = 12 fins per inch

19 Preheat Coil Connection Hand
- L = left hand
- R = right hand
- Y = none

20 Preheat Coil Piping Package
- F = factor installed
- L = shipped loose
- Y = none

21 Preheat Coil Connection Type
- S = sweated
- T = threaded
- N = none

Model Number Description

Table 2: Model Number Description: Fields 21 - 41

Field	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
Code	YY	W1	12	R	F	T	Y	000	Y	P	PSC	S	3	Q	Y	MR	Y	D	Y	R

22 Not currently used
- YY = none

23 Reheat Coil Type
- W1 = 1-row water
- S1 = 1-row steam
- YY = none

24 Reheat Coil Fins Per Inch
- 12 = 12 fins per inch

25 Reheat Coil Connection Hand
- L = left hand
- R = right hand
- Y = none

26 Reheat Coil Piping Package
- F = factor installed
- L = shipped loose
- Y = none

27 Reheat Coil Connection Type
- S = sweated
- T = threaded
- N = none

28 Electric Heat Power Supply
- A = 115-60-1
- E = 208-230/60/1
- J = 277-265/60/1
- Y = None

29 Electric Heat Wattage
- 005 = 0.5 kW Electric Heat
- 010 = 1.0 kW Electric Heat
- 015 = 1.5 kW Electric Heat
- 020 = 2.0 kW Electric Heat
- 025 = 2.5 kW Electric Heat
- 030 = 3.0 kW Electric Heat
- 040 = 4.0 kW Electric Heat
- 050 = 5.0 kW Electric Heat
- 060 = 6.0 kW Electric Heat
- 000 = None

30 Not currently used
- YY = none

31 Drain Pan Material
- P = plastic, non-corrosive
- S = stainless steel

32 Blower Motor Type
- PSC = PSC motor
- XXX = special

33 Discharge Conditions
- S = standard static

34 Motor Speed
- 3 = 3 speed

35 Motor Connections
- Q = quick connect

36 Not currently used
- YY = none

37 Fresh Air Damper
- MR = manual rear
- 2R = automatic, 2-position, rear
- ER = automatic, economizer
- XX = special
- YY = none

38 Not currently used
- YYY = none

39 Unit Disconnect Switch
- D = toggle disconnect switch
- X = special
- Y = none

40 Future Control Function
- Y = none

41 Control Type
- A = analog
- D = digital
- R = DDC Ready
- X = Special
- Y = None

Table 3: Model Number Description: Fields 43-59

Field	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Code	Y	Y	Y	RL	MOR	Y	3MOU	YYYY	3MOU	Y	Y	C	Y	Y	Y

42 Network Communication Card
- Y = none

43 Changeover Type
- Y = none
- A = auto
- M = manual
- U = user selectable

44 Programmability
- Y = none

45 Setpoint Adjustment
- YY = none
- UL = unit-mounted, +/- 3 degrees
- UF = unit-mounted, full range
- RL = remote-mounted, +/- 3 degrees
- RF = remote-mounted, full range

46 Fan Speed Control
- YYY = None
- MOU = manual, on/off, unit-mounted
- MOR = manual, on/off, remote-mounted
- MAU = manual, low/med/high, unit-mounted
- MAR = manual, low/med/high, remote-mounted
- MPU = manual, off/proportional, unit-mounted
- MPR = manual, off/proportional, remote-mounted
- SOU = SCR, on/off, unit-mounted
- SOR = SCR, on/off, remote-mounted
- SAU = SCR, low/med/high, unit-mounted
- SAR = SCR, low/med/high, remote-mounted
- SPU = SCR, off/proportional, unit-mounted
- SPR = SCR, off/proportional, remote-mounted

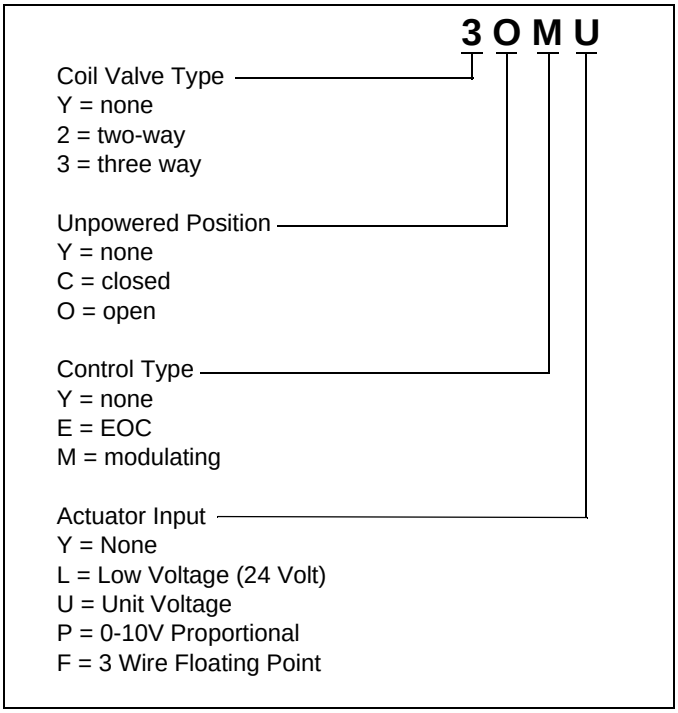
47 Timed Override
- Y = none

48 Valve - Primary Coil
- See Table 4

49 Valve - Preheat Coil
- See Table 4

50 Valve - Reheat Coil
- See Table 4

Table 4: Model Number Detail: Coil Valve Fields 49, 50, 51



51 Future Control Function
- Y = None

52 Low Temperature Protection
- Y = None
- X = special

53 Condensate Overflow Protection
- C = condensate overflow protection
- Y = None
- X = special

54 Discharge Air Thermistor
- Y = None
- X = special

55 Smoke Input Sensor
- Y = None
- X = special

56 Occ / Vacant Control Input
- Y = None
- X = special

Model Number Description

Table 5: Model Number Description: Fields 57 - 72

Field	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
Code	Y	Y	Y	Y	S	18	P	I	00	S	00	00	30F	TA	FR	1

57 Filter Status Sensor
- Y = None
- X = special

58 Fan Status Sensor
- Y = None
- X = special

59 Future Control Function
- Y = None

60 Future Control Function
- Y = None

61 Cabinet Style
- S = Standard
- T = Tamperproof
- Y = None

62 Cabinet Gauge
- 16 = 16 Gauge
- 18 = 18 Gauge
- YY = None
- XX = Special

63 Cabinet Coating Type
- B = Powder Coat
- Y = None

64 Color- Cabinet
- I = Antique Ivory
- W = Off White
- G = Soft Gray
- C = Cupola White
- P = putty Beige
- Y = None
- X = Special

65 Cabinet Depth Extension
- 00 = None
- 04 = 4 Inch Extended Depth
- 08 = 08 inch Extended Depth

66 Unit Lineup Position
- S = Standalone

67 Left Hand End Pocket Extension
- 00 = None
- 04 = 4 Inch Extended Length
- 08 = 8 inch Extended Length

68 Right Hand End Pocket Extension
- 00 = None
- 04 = 4 Inch Extended Length
- 08 = 8 inch Extended Length

69 Subbase
- 30F = 3" subbase with leveling feet
- 30Y = 3" subbase without leveling feet
- XXF = special with leveling feet
- XXY = special without leveling feet
- YYY = none

70 Discharge Air - Outlet
- TA = top discharge with stamped louver grille
- TB = top discharge with multi-directional grille
- TY = top discharge with no grille
- TD: top discharge with duct collar
- FD = front discharge with duct collar
- FY = front discharge with no duct collar
- BD = bottom discharge with duct collar
- BY = bottom discharge with no duct collar
- XX = special

71 Return Air Inlet
- FR = front inlet with open return
- FS = front inlet with stamped louver
- FT = front inlet with toe space
- TR = top inlet with open return
- TS = top inlet with stamped louver
- BR = bottom inlet with open return
- BS = bottom inlet with stamped louver
- BT = bottom inlet with toe space
- XX = special

72 Filter
- 1 = 1” Throwaway Filter
- 3 = 1” Throwaway + (1) Extra

Table 6: Model Number Description: Fields 73 - 78

Field	73	74	75	76	77	78
Code	YYY	Y	A	S	Y	1

73 Special Options
- YYY = none

74 Reserved for future use
- Y = none

75 Agency Listing
- A = ETL, CETL, ARI
- R = ETL, CSA
- X = special
- Y = none

76 Packaging
- S = Standard
- T = palletized based on tagging and by floor

77 Extended Warranty
- Y = none (standard warranty)
- 1 = 1 year Extended component warranty (30 month from shipment or 24 month from installation)
- 2 = 2 year Extended component warranty (42 month from shipment or 36 month from installation)
- 3 = 3 year Extended component warranty (54 month from shipment or 48 month from installation)
- 4 = 4 year Extended component warranty (66 month from shipment or 60 month from installation)
- X = special

78 Product Style
- 1 = Style 1

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ThinLine™ 3G Hideaway Unit Discharge Conversion Kit

Group: **Applied Air Systems**
Part Number: 910118016
Date: March 2011

Safety Information

⚠ WARNING

The installation of this equipment shall be in accordance with the regulations of authorities having jurisdiction and all applicable codes. It is the responsibility of the installer to determine and follow the applicable codes. This equipment is to be installed only by an experienced installation company which employs trained personnel.

⚠ WARNING

Rigorously adhere to field wiring procedures regarding proper lockout and tagout of components.

⚠ WARNING

To avoid electrical shock, personal injury or death:

1. Installer must be qualified, experienced technician.
2. Disconnect power supply before installation to prevent electrical shock and damage to equipment.

Introduction

There may be instances when the airflow discharge direction needs to be changed. The appropriate conversion kits are available from Daikin for field installation. Contact your Daikin Sales Represetative for details.

Table 1: Discharge Conversion Kits

Unit Size	Part Number	Quantity
02	910113221	1
03	910113222	1
04	910113223	1
06	910113224	1
08	910113225	1
10	910112579	1
12	910113226	1

Procedure

Top discharge to front discharge

1. Remove the discharge duct collar from the top of the unit by removing the screws (see Figure 1). Save all screws for future use.
2. Remove the screws holding the fan deck to the front block-off plate and slide the fan deck part-way out.
3. Remove the front block-off plate by removing the mounting screws located on either side of the chassis (see Figure 1).
4. Attach the top block-off plate to the top of the unit replacing the discharge duct collar using the retained screws (see Figure 2).
5. Attach the short front panel to the front of the chassis as shown. Secure the short panel with four of the retained screws, two on either side (see Figure 2).

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Figure 1: Removing the Discharge Duct Collar and Front Block-off Plate

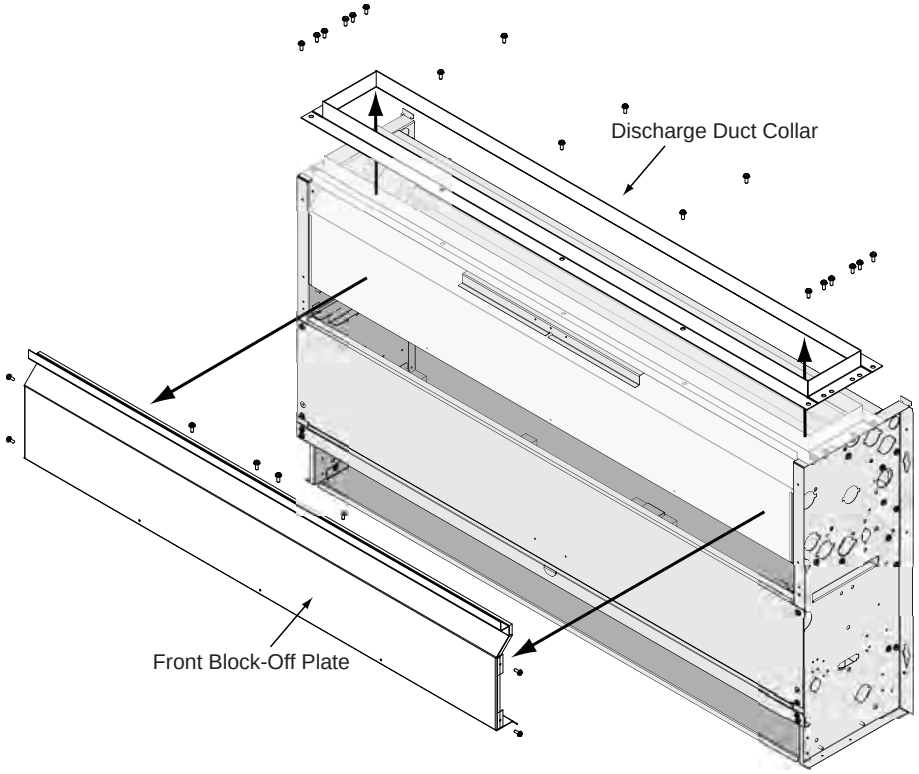
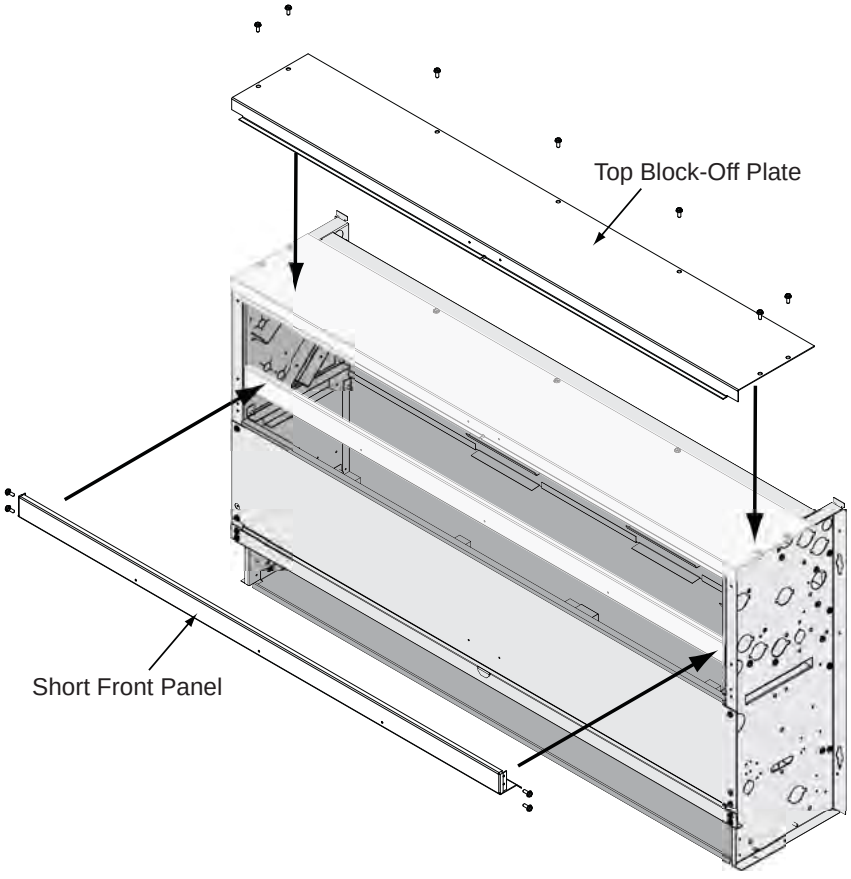


Figure 2: Attaching the Top Block-Off Plate and Short Front Panel



Fresh Air Damper Kit for ThinLine™ 3G Vertical Fan Coils

Group: **Applied Air Systems**
Part Number: 668115702
Date: **August 2009**

The fresh air damper kit provides up to 25% outside air to the fan coil. It consists of an intake with damper blade and insect screen. The damper may be manually controlled through the return air opening or with an optional field-installed damper motor.

Installation Instructions

⚠ CAUTION

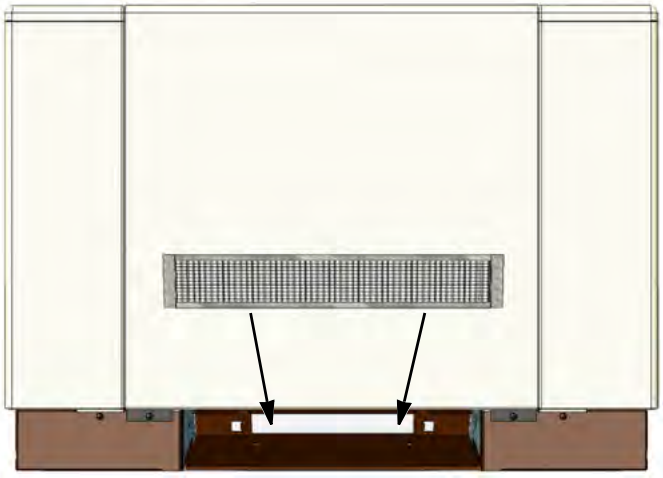
Sharp metal edges are potential injury hazards. Wear protective gloves.

1 Locate components and remove from carton. Kit includes:

- Damper box
- Screen

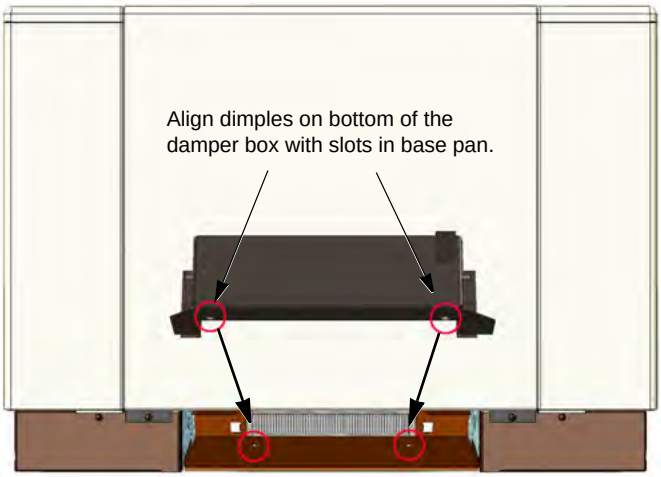
2 Place the screen against the opening in the back of the unit base. See Figure 1.

Figure 1: Place Screen Against Opening in Unit Base



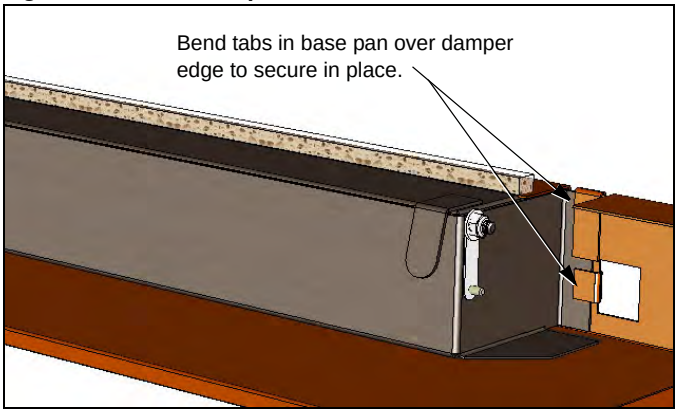
3 Slide the damper box in place against the screen, matching the dimples on the bottom of the damper box to the slots on the unit base (see Figure 2).

Figure 2: Slide the Damper Against the Screen



4 To secure the damper to the unit, bend the tabs in the unit base pan against the left and right edges of the damper (see Figure 3).

Figure 3: Secure Damper with Tabs in Unit Base Pan



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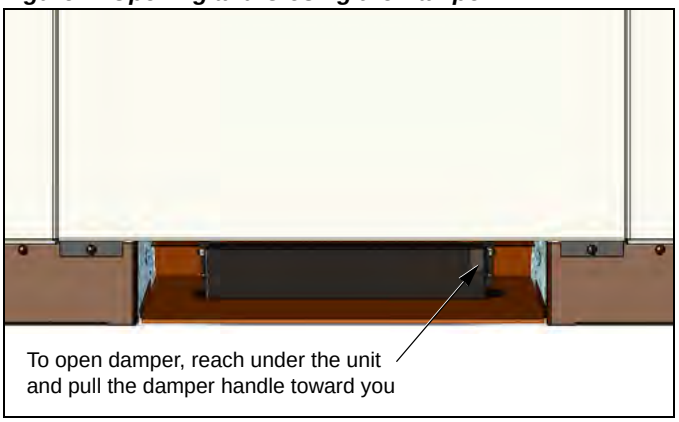
Operation

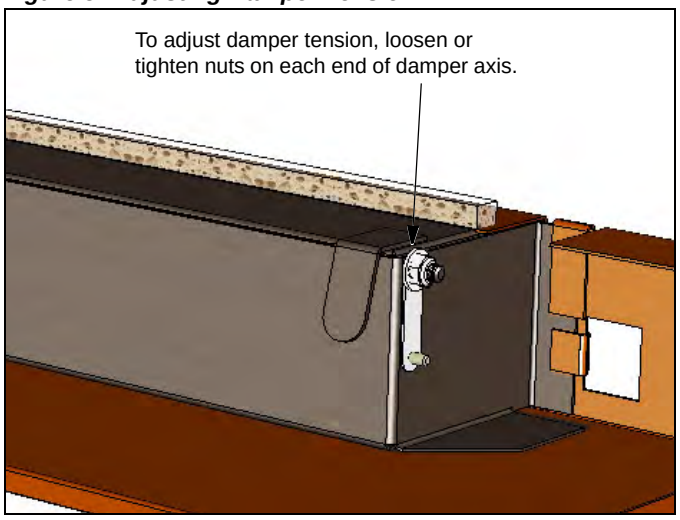
To open the damper, reach under the unit and pull the damper handle toward you. To close, push the damper away from you. See Figure 4.

Figure 4: Opening and Closing the Damper



If the damper is difficult to open or moves too freely, you can adjust the tension by tightening or loosening the nuts on its pivot axis. See Figure 5.

Figure 5: Adjusting Damper Tension



Cold Weather Operation

Fan coils may experience erratic operation during cold ambient conditions with the outside air damper in the open position.

⚠ IMPORTANT

It is the responsibility of the contractor to ensure that factory-installed gasketing matches up with the wall opening, or that additional material is used, to provide a positive seal and prevent infiltration of ambient conditions.

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Fresh Air Damper Motor Kit for ThinLine™ 3G Vertical Fan Coils

Group: **Applied Air Systems**
Part Number: 910103368
Date: **August 2009**

This damper motor kit is set up for field installation with the corresponding fresh air damper kit for ThinLine 3G fan coils. The damper kit must be ordered separately. The damper motor is always mounted on the same end as the unit control box. The unit control box is always mounted on the opposite side of the primary coil connections. (Example: For right-hand units use left-hand damper motor kit.) Inspect the contents for shipping damage and the correct items. See Figure 1for a list of kit components.

NOTICE

Installation and maintenance are to be performed only by qualified personnel who are familiar with and in compliance with state, local and national codes and regulations, and experienced with this type of equipment.

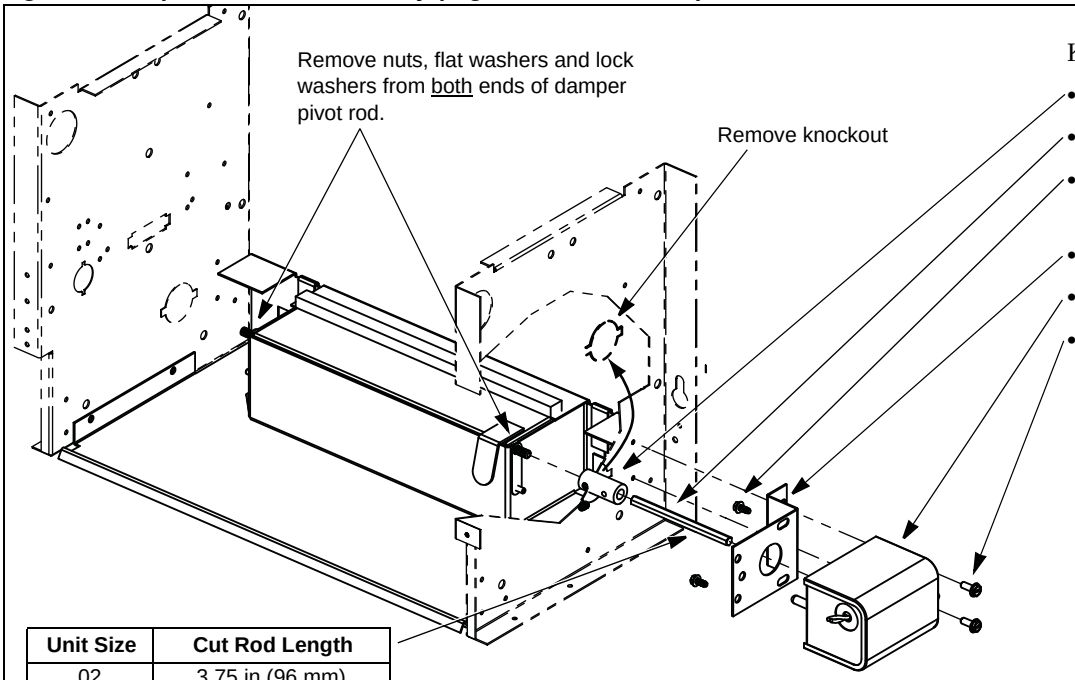
⚠ CAUTION

Sharp edges! Metal edges are potential injury hazards. Wear protective gloves.

Installation Instructions

1. Before installing the fresh air damper kit, remove the nuts and washers from each end of the damper pivot rod. See Figure 1.
2. Install the fresh air damper kit according to the instructions provided in Daikin IM 1023.
3. Locate all damper motor kit components and remove from carton. See Figure 1 for a component list.

Figure 1: Damper Motor Kit Assembly (Right Hand Kit Shown)


Remove nuts, flat washers and lock washers from both ends of damper pivot rod.
Remove knockout
Kit Components:
• Coupling with setscrews
• Damper control rod
• Motor mounting screws, (2) #10 x 1/2" (13 mm)
• Motor mounting bracket
• Motor
• Motor bracket mounting screws, (2) #8-32 x 3/8" (10 mm)

Unit Size	Cut Rod Length
02	3.75 in (96 mm)
03	6.5 in (165 mm)
04	6.25 in (159 mm)
06	11.75 in (298 mm)
08	6.5 in (165 mm)
10	12 in (305 mm)
12	17.5 in (445 mm)

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4 Install the coupling on the end of the damper pivot rod closest to the unit control box With the damper blade in the closed (up) position, secure the coupling by tightening the setscrew with the setscrew facing the front of the unit.

Note: Suggestion: flatten the threads of the damper pivot rod where it contacts the setscrew to prevent the setscrew from slipping.

5 Attach the damper motor to the mounting bracket with two #8-32 x 3/8" screws.

6 Remove the end pocket cabinet panel from the control box side of the fan coil (remove attaching screw from tab on the bottom front of the panel and lift off panel).

7 Remove the knockout in the fan coil chassis that provides access for attaching the motor control rod to the damper. See Figure 1.

8 Cut the damper control rod to the proper length according to the chart in Figure 1.

9 Slide the damper control rod through the knockout hole and into the coupling you installed in Step 4. Do not tighten set screw!

10 Position the damper motor so that the motor control rod fits into the motor coupling (do not tighten set screw) and secure the motor bracket to the chassis using the #10 x 1/2" sheet metal screws.

Note: This is for preliminary positioning of the control rod.

11 Now position the rod so that the set screws on both the damper coupling and the motor coupling will grip the rod firmly. Mark the rod on the motor end.

12 Remove or back out the motor bracket until you are able to tighten the 1/8" Allen set screw on the motor coupling, then secure the motor coupling according to your previous mark.

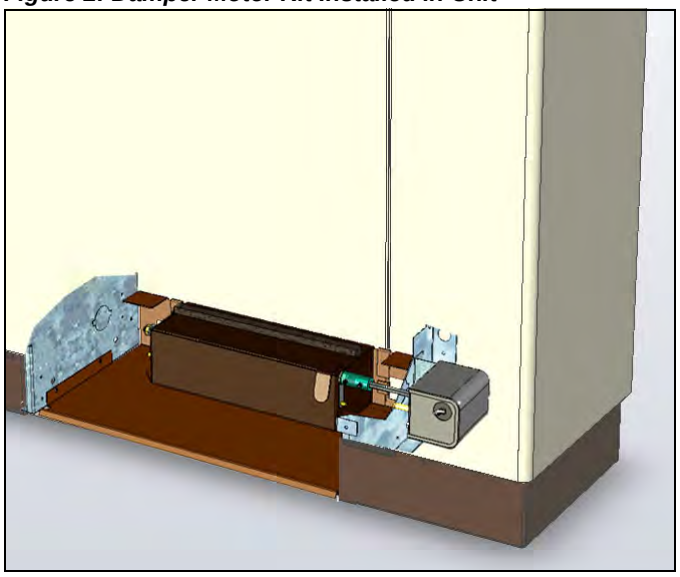
13 Slide the rod back into the damper coupling and secure the motor bracket to the end panel, making sure the rod is centered in the knockout hole.

14 The damper rod should be positioned according to the earlier alignment. Tighten the setscrew on the coupling with the damper in the closed position. This requires holding the damper in the closed position while marking the proper angle.

15 Manually open the damper blade on the fresh air intake box and let the spring return on the damper motor close the damper blade. If necessary, loosen the setscrew on the coupling and adjust the damper blade until the spring will close the damper blade, then retighten the setscrew.

16 The 24 VAC air damper actuator contains 2 yellow wires. One wire connects to the air damper control's 24 VAC power wire. The other wire connects to neutral. Power consumption = 10 VA.

Figure 2: Damper Motor Kit Installed in Unit



Cabinet Rear Extension Kit for ThinLine™ 3G Vertical Fan Coils and Unit Heaters

Group: **Applied Air Systems**
Part Number: 910102148
Date: **August 2009**

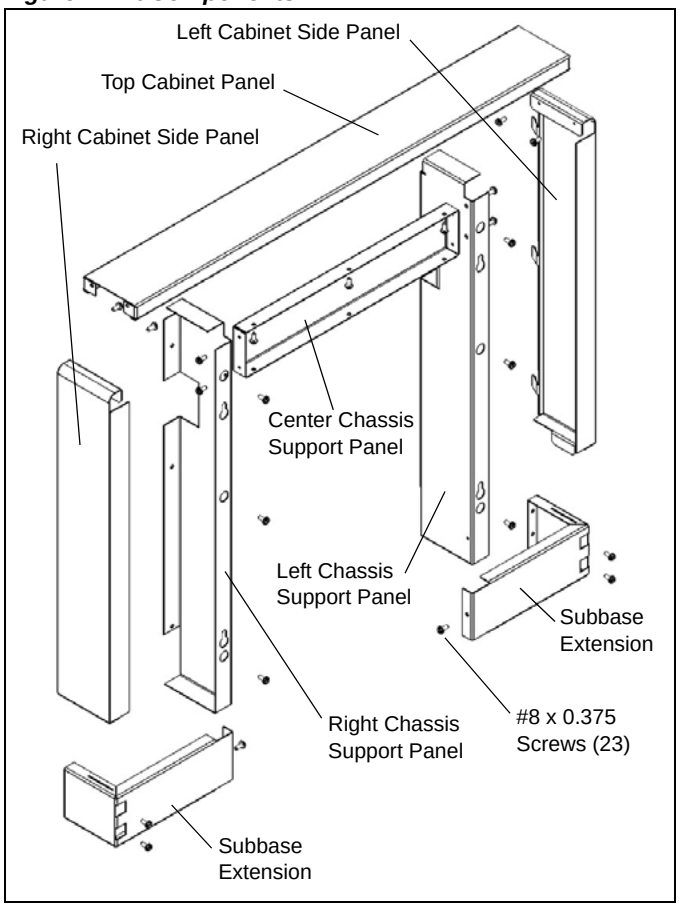
The field-installed cabinet rear extension option may be utilized to place the fan coil farther out from the wall than the standard unit allows.

Note: This option is not designed to be an air duct or outside air plenum.

NOTICE

Installation and maintenance are to be performed only by qualified personnel who are familiar with and in compliance with state, local and national codes and regulations, and experienced with this type of equipment.

Figure 1: Kit Components



Installation Instructions

⚠ DANGER

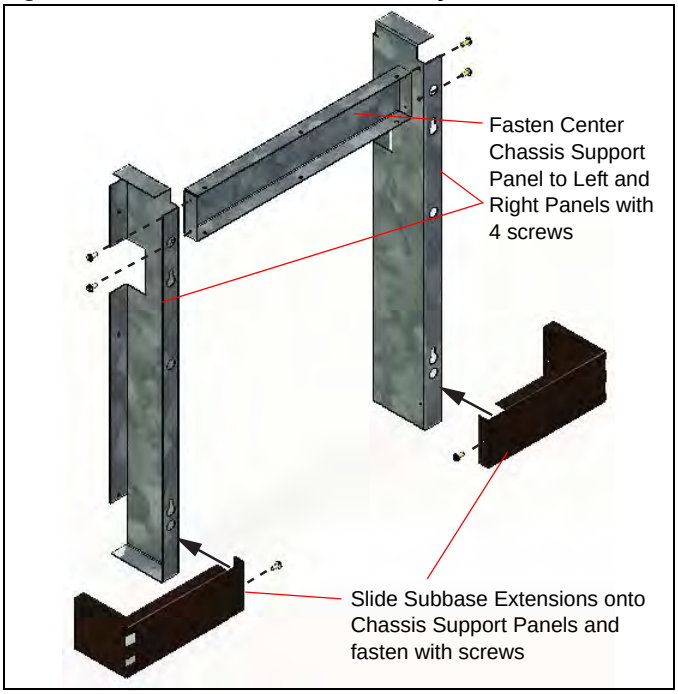
Electrical shock will cause severe injury or death. Disconnect all electrical power before servicing unit.

⚠ WARNING

Wear protective gloves to avoid possible cuts and abrasions from exposed edges. Avoid contact with sharp edges.

1. Locate all components and remove from carton. See Figure 1. Kit includes:
   - Package of 23 screws - #8 x 0.375
   - Left and Right Chassis Support Panels
   - Center Chassis Support Panel
   - Top Cabinet Panel
   - Left and Right Cabinet Side Panels
   - 2 Subbase Extensions
2. Attach Center Chassis Support Panel to Right and Left Chassis Support Panels using 4 screws. See Figure 2.

Figure 2: Chassis & Subbase Assembly


Fasten Center Chassis Support Panel to Left and Right Panels with 4 screws
Slide Subbase Extensions onto Chassis Support Panels and fasten with screws

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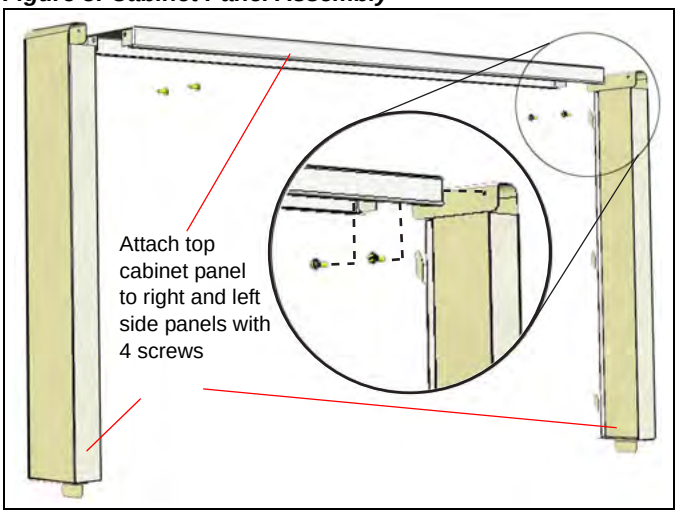
3 Attach Subbase Extensions to the Right and Left Chassis Support Panels using 1 screw in each. See Figure 2.

4 Attach the Top Cabinet Panel to the Right and Left Cabinet Side Panels using 4 screws (2 on each side). See Figure 3.

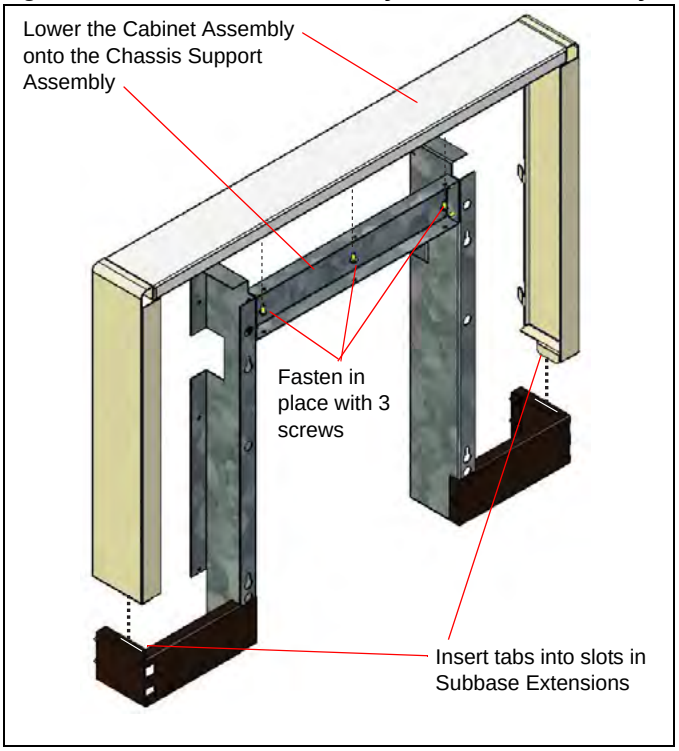
Figure 3: Cabinet Panel Assembly



5 Lower the Cabinet Assembly from step 4 onto the Chassis Support Assembly from step 3 (see Figure 4). Note that the tabs on the Cabinet Side Panels are inserted into the slots in the Subbase Extensions.

6 Use 3 screws to fasten the Top Cabinet Panel to the Center Chassis Support Panel.

Figure 4: Attach Cabinet Assembly To Chassis Assembly

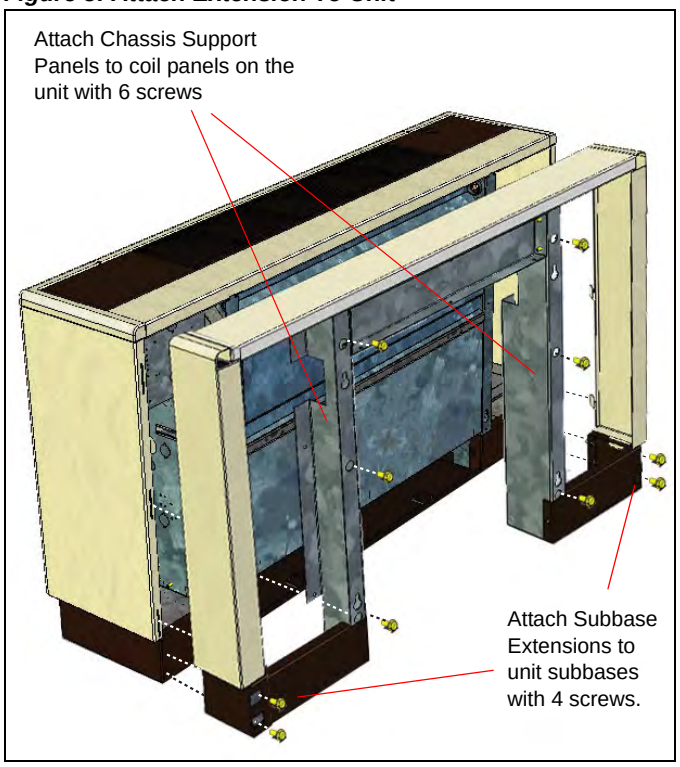

Lower the Cabinet Assembly onto the Chassis Support Assembly
Fasten in place with 3 screws
Insert tabs into slots in Subbase Extensions

7 Attach extension to fan coil unit as follows (see Figure 5):

a Attach the Subbase Extensions to the left and right subbases on the unit using 4 screws.

b Attach the Left and Right Chassis Support Panels to the left and right coil panels on the fan coil unit using 6 screws.

Figure 5: Attach Extension To Unit


Attach Chassis Support Panels to coil panels on the unit with 6 screws
Attach Subbase Extensions to unit subbases with 4 screws.

Some common applications for the rear cabinet extension include:

- Allow additional depth for appearance of unit.
- Allow additional clearance for cross-over piping and connections.
- Extend the discharge grille past drapery or wall hangings.
- Cover floor covering terminations in remodeling projects.
- Allow for piping entry through the side panels of the unit.

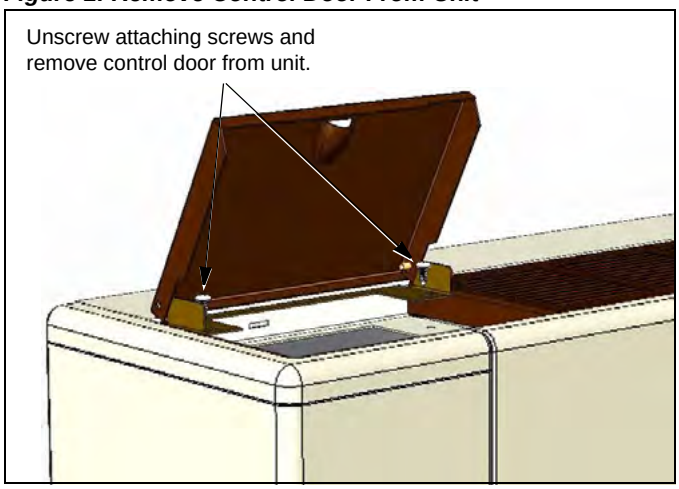
Key-Lock Access Door for ThinLine™ 3G Vertical Fan Coils

Group: **Applied Air Systems**
Part Number: 668115705
Date: **August 2009**

The key-lock access door kit can be installed on ThinLine 3G cabinet units to prevent access to unit controls. It is installed as follows.

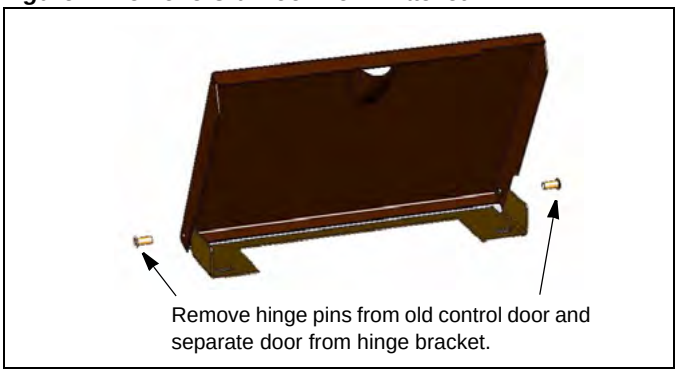
1. Locate all components and remove from carton. Kit includes:
   - Tamperproof control door
   - 2 hinge pins
   - Locking mechanism
   - Locking mechanism keys
2. Open the control door on the fan coil. Then unscrew the two attaching screws and remove the door from the unit. See Figure 1. Save screws for reattachment!

Figure 1: Remove Control Door From Unit



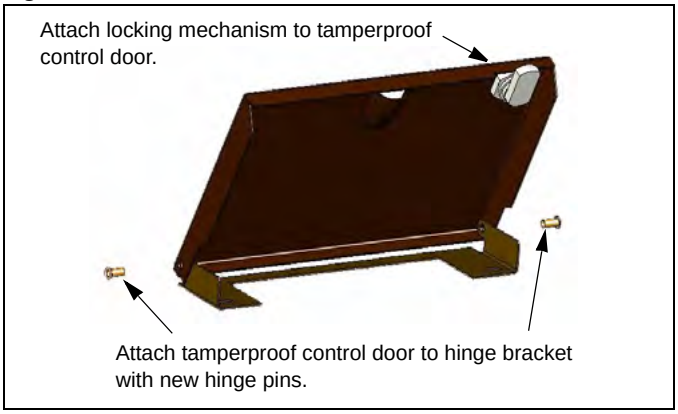
3. Remove the hinge pins from the old control door by either re-rounding the flattened pin ends with a needle-nose pliers or drilling out the pins with a 5/32” drill bit. Then separate the door from the hinge bracket.

Figure 2: Remove Old Door from Bracket



4. Attach the locking mechanism to the tamper-proof control door. See Figure 3.
5. Attach the new tamperproof control door to the hinge bracket using new hinge pins. See Figure 3. Secure the hinge pins to the bracket by pinching protruding ends with a needle-nose pliers.

Figure 3: Attach Bracket and Lock to New Door


Attach locking mechanism to tamperproof control door.
Attach tamperproof control door to hinge bracket with new hinge pins.

6. Install the new door and locking mechanism on the unit using the screws removed in Step 2.

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MT 155 Thermostat

Group: **Applied Air Systems**
Part Number: 910102989
Date: **August 2009**

Installation

⚠ DANGER

READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS THERMOSTAT.

Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/ OR PROPERTY DAMAGE.

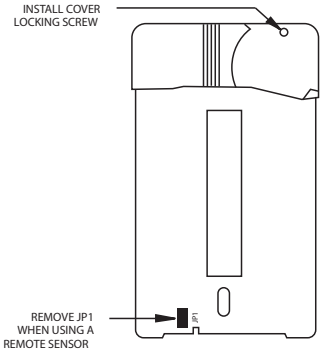
To avoid electrical shock or damage to equipment, disconnect power before installing or servicing. Use only wiring with insulation rated for full thermostat operating voltage. Use copper wire only. Insulate or wirenut all un-used leads. Any wiring, including the remote probe,may carry the full operating voltage of the thermostat.

To avoid potential fire and/ or explosion do not use in potentially flammable or explosive atmospheres.

Retain these instructions for future reference. You must review your application and national and local codes to ensure that your installation will be functional and safe.

1. Install the thermostat with the two furnished mounting screws to a standard 2" x 4" electrical box, 4-11/16" x 2-1/8" square device box with a 2" x 4" adapter ring or to a 4" x 4" box with accessory adapter plate.
2. For wall installations, mount the thermostat on an inside wall approximately 5 feet above the floor. The location should provide circulation at average room temperature. Avoid direct sunlight or sources of hot or cold air in the room or wall.
3. Remove the knob and then the cover. Mount thermostat base assembly to the outlet box using the screws provided, tighten the screws evenly but do not over tighten. Make wiring connections as noted.
4. To use a remote sensor, remove jumper JP-1 to disable local sensing. See Figure 1. Failure to remove JP-1 when using a remote sensor will cause improper operation of the thermostat. Some units do not have remote sensing capability. See Application Notes.

Figure 1: Removing Jumper JP-1



5. Reinstall the cover assembly. Install cover locking screw provided. Reinstall the knob.
6. Checkout: After wiring and installation are complete, energize the system and check the operation. Adjust the thermostat as necessary to complete at least one cycle. Be sure the thermostat and all other equipment are functioning correctly.

Thermostat Operation

Temperature Range: 50°F - 90°F (10°C - 32°C)

TA155: A HEAT-OFF-COOL system switch manually selects heating or cooling mode. In the HEAT position, only the heat output cycles with demand. In the COOL position, only the cool output cycles with demand. In the OFF position, heating and cooling outputs are off. Units with a two position system switch or without a system switch must use a load transfer switch when both heating and cooling outputs are used. This prevents control failure and equipment damage caused by direct cycling between loads.

TB155: An ON-OFF system switch enables auto-changeover of heating and cooling modes. In the ON position the thermostat activates heating or cooling outputs dependant upon the relationship between set point and ambient temperature. Heat on to cool on dead band is 4°F. In the OFF position, heating and cooling outputs are off. Units without a system switch cycle between heating and cooling with a 4°F dead band.

FAN: Some units have a switch for manual selection of fan speed. On these units fan operation is either internally wired

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for fan continuous operation or is dependant upon connection to the fan supply input . When internally wired for fan continuous operation, the fan will be off when the system switch is off. When dependant upon external connections the fan may not be off with the system switch in the off position. The fan supply input is switched to fan speed outputs (HI - MED - LO).

SWITCHED POWER: L1 power is switched to this output any time the system switch is out of the OFF position.

Ratings

Table 1: Fan and system switches

Voltage Rating	Inductive		Resistive Amps	Pilot Duty	Thermostatic Switching
	FLA	LRA			
24 VAC	N.A.	N.A.	N.A.	24 VA	10 VA
120	5.8	34.8	6.0	125 VA	20 VA
240	2.9	17.4	5.0	125 VA	20 VA
277	2.4	14.4	4.2	125 VA	20 VA

Wire Lead Colors (if applicable)

White with Orange Stripe	Fan High
White with Red Stripe	Fan Med.
White with Brown Stripe	Fan Low
Red	Heat
Blue	Cool
Black	L1
Yellow	L2 or Neutral
Orange	Switched Power
Violet	Fan Supply
Brown	Remote Probe
Brown	Remote Probe

Application Notes

1. To use a remote sensor, remove jumper JP-1 to disable local sensing. See Figure 1. Failure to remove JP-1 when using a remote sensor will cause improper operation of the thermostat. Some units do not have remote sensing capability.
2. Units with remote sensing capability have a four-position terminal block at TB1. If TB1 is two position the unit is local sensing only.
3. Remote probe wiring should be located away from any electrical motors or power wiring
4. Some units are internally wired for permanent fan continuous operation.
5. On units with a Fan Supply input, the operation of the fan is determined by wiring connection. For fan continuous, jumper the Fan Supply input (TB2-5) to the Switched Power output (TB3-3).
6. For fan cycling operation with a call for heat or cool, a fan relay must be used.
7. Observe electrical ratings. Thermostatic outputs are pilot duty only.

Wiring Diagrams

Figure 2: Units with remote sensing capability

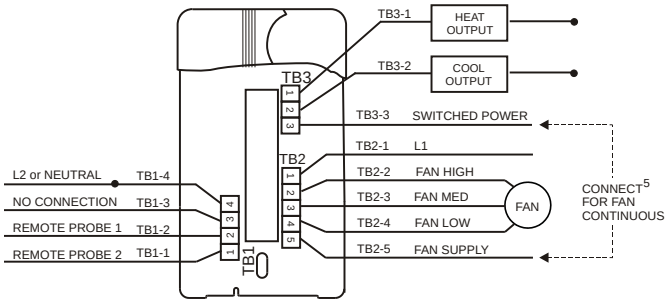


Figure 3: Units with switches used for local sensing only

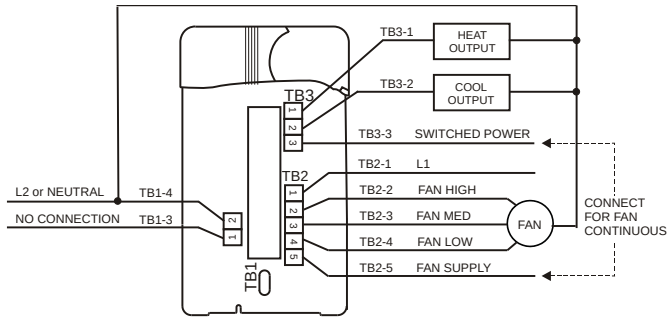


Figure 4: Units with no switches with local/remote sensing capability

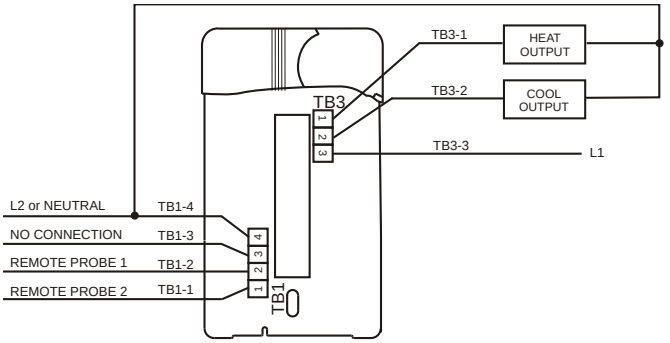
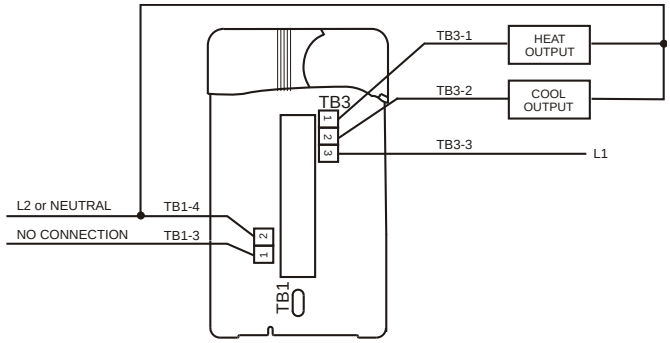


Figure 5: Units with no switches used for local sensing only



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Installation and Maintenance Manual | IM 1089

Field installation of Thermostat (MTA155 or MTB155) and 24V valve packages on Vertical Thinline 3G fan coil units with factory-installed Low Voltage Interface Board

Group: **Applied Air Systems**
Part Number: IM 1089
Date: **October 2010**

General

⚠ DANGER

READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS THERMOSTAT.

Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/ OR PROPERTY DAMAGE.

To avoid electrical shock or damage to equipment, disconnect power before installing or servicing. Use only wiring with insulation rated for full thermostat operating voltage. Use copper wire only. Insulate or wire-nut all un-used leads. Any wiring, including the remote probe, may carry the full operating voltage of the thermostat.

To avoid potential fire and/ or explosion do not use in potentially flammable or explosive atmospheres.

Retain these instructions for future reference. You must review your application and national and local codes to ensure that your installation will be functional and safe.

⚠ CAUTION

Care should be used to avoid electrostatic discharge to the microprocessor.

This unit has configuration dip switches and jumpers. You may need to reconfigure the thermostat for your application.

Installation
Please refer to Fig. 1, 2, 3 and 4

Two-pipe system (Cooling or Heating)

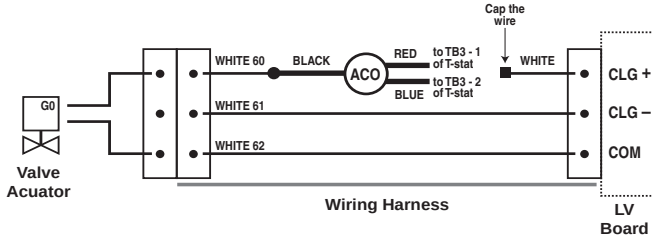
To field wire a T*155 thermostat (either as wall-mounted or unit-mounted) and field-install valve package for a 2-pipe system the following accessories are required:

- Single-Pole Double-Throw Automatic Changeover Switch (SPDT ACO Kit P/N 039398600)
- Thermostat TA155 (kit) – PN 107345302 or Thermostat TB155 (kit) – PN 107345304
- 10K Return Air Sensor - PN 107345501

Step 1: Installing NC (Normally Closed) valve packages

- Solder the appropriate inlet and outlet pipe connections from the valve package to the coil connections.
- Snap-on the SPDT ACO Switch on the supply side of the valve package (SPDT ACO Kit P/N 039398600 to be ordered as field-installed option)
- Cut white wire 60 of the wiring harness leading from the Low Voltage Interface Board terminal connection (see Fig. 1) prior to attaching the quick-connect connector of the On-Off valve actuator to the interface board (Fig. 3). The white wire lead going to the actuator will be connected to terminal No. 1 of the ACO switch (see Fig. 5):
  - Terminal No. 1: black wire - to be connected to the valve side (G terminal) with white wire of the terminal strip
  - Terminal No. 2: red wire – to be connected to the red wire (TB3-1) of the thermostat
  - Terminal No. 3: blue wire – to be connected to the blue wire (TB3-2) of the thermostat

Figure 1: Automatic changeover connection between the valve actuator and the interface board



Step 2: Provide power to thermostat (refer to Fig. 2 and 4)

- Connect a wire from thermostat terminal TB1- 4 (L2 Neutral) to the common terminal on Low Voltage Interface Board (terminal C)
- Connect a wire from thermostat terminal TB2- 1 (24VAC) to the 24 V terminal connection R.
- Connect fan speed wires from the thermostat to appropriate Low Voltage Interface Board terminals:
  - Connect a wire from thermostat terminal TB2- 2 (High fan speed) to the HI terminal
  - Connect a wire from thermostat terminal TB2- 3 (Med fan speed) to the Med terminal

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Figure 2: Low Voltage Interface Board shown with all additional support options

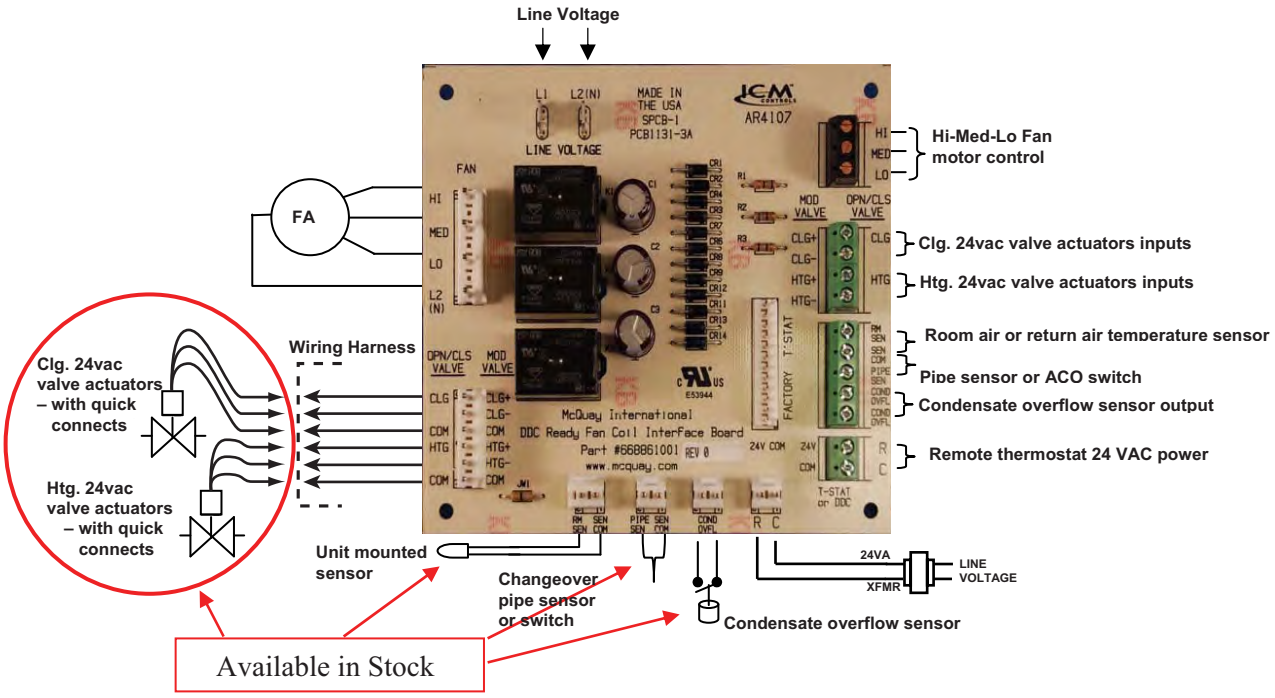


Figure 3: Factory-installed and wired Low Voltage Interface Board (Wiring Diagram)

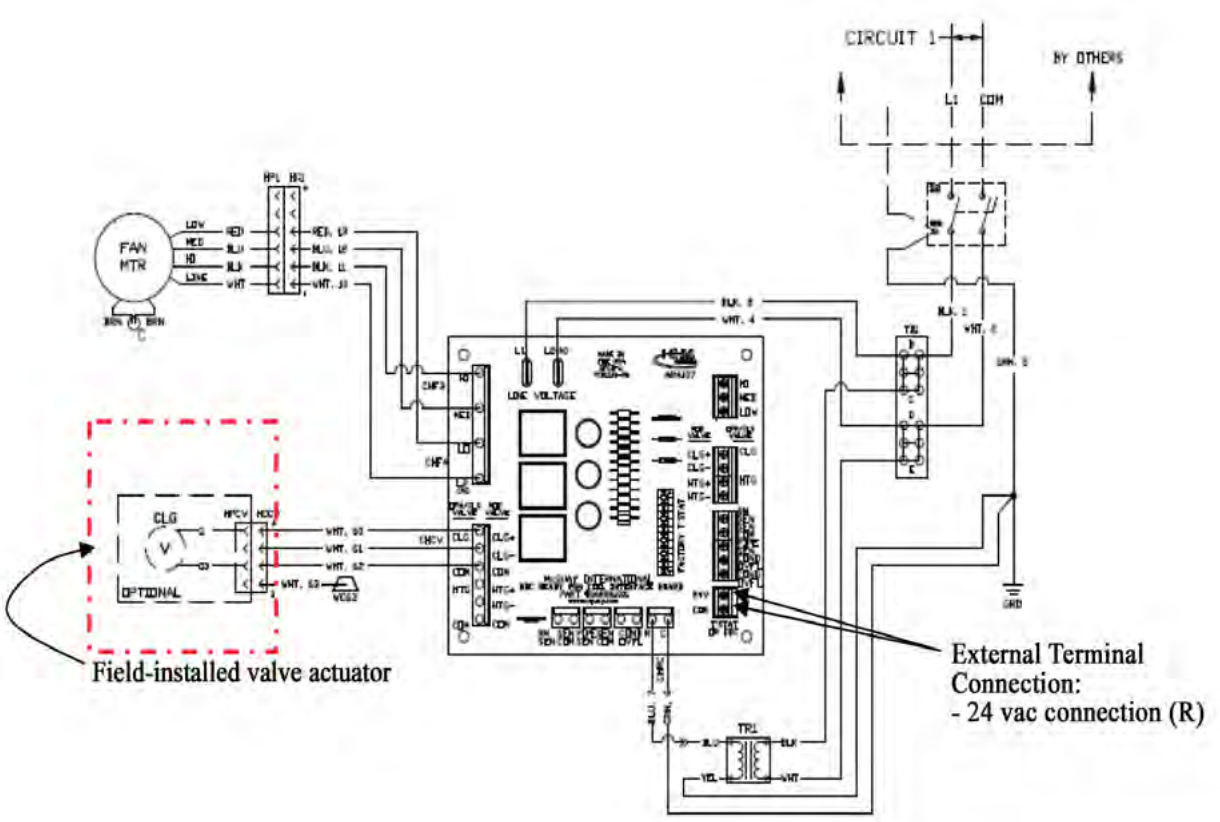


Figure 4: Thermostat TB155 autochangeover to be used with On-Off 24V valve packages, SPDT ACO and unit-mounted Low Voltage Interface Board

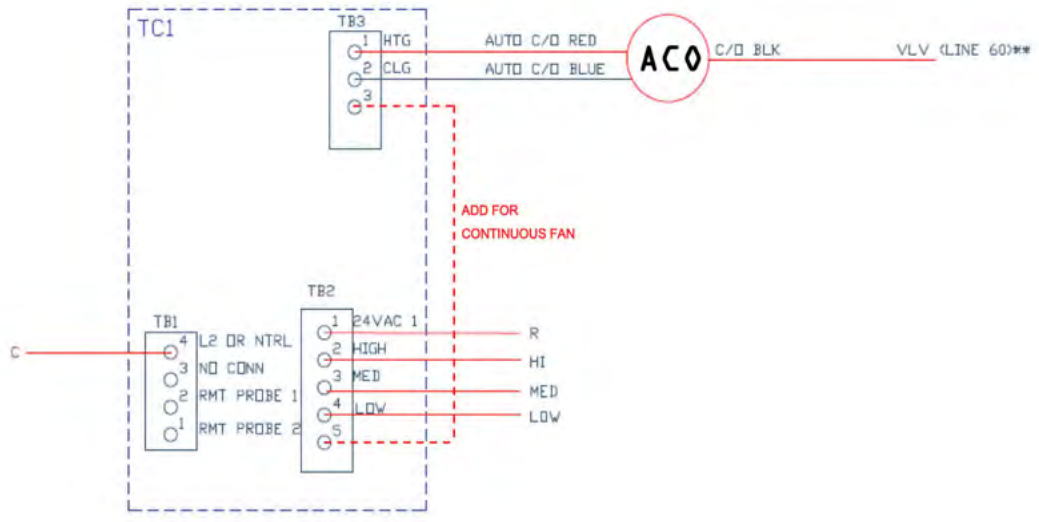
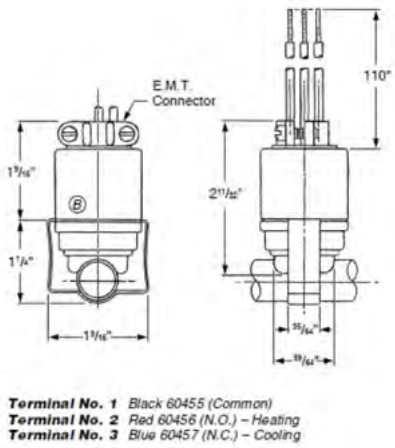


Figure 5: Automatic changeover switch (SPDT ACO Kit P/N 039398600)



- Connect a wire from thermostat terminal TB2- 24 (Low fan speed) to the Low terminal

- Remove Jumper JP1 to allow the remote mounted 10K Return Air Sensor to operate.
- Mount the 10K Return Air Sensor (PN 107345501) above the filter through the knockout provided

Note: (1) If a fan coil unit is to be used for heating or cooling only, the SPDT ACO Switch (SPDT ACO Kit P/N 039398600) is not required. For such applications just follow Step 2.

Four-pipe system (Cooling and Heating)

Two piping packages will be required for CW and HW coils. The following accessories needed for field-installed thermostat model T*155 (unit-mounted or wall-mounted):

- Thermostat TA155 (kit) – PN 107345302 or Thermostat TB155 (kit) – PN 107345304
- 10K Return Air Sensor - PN 107345501 for unit-mounted applications only (for wall-mounted applications the sensor is imbedded with the thermostat)

Step 1: Installing valve packages

- Solder the appropriate inlet and outlet CW pipe connections from the valve package to the coil connections.
- Solder the appropriate inlet and outlet HW pipe connections from the valve package to the coil connections.
- Snap-on the Quick-connects of the valve actuators to the appropriate terminals of the Low Voltage Interface Board as per Fig. 2.

Step 2: Provide power to thermostat (refer to Fig. 2 and 4)

- Connect a wire from thermostat terminal TB1- 4 (L2 Neutral) to the common terminal on the interface board (terminal C)
- Connect a wire from thermostat terminal TB2- 1 (24VAC) to the 24 V terminal connection R.
- Connect fan speed wires from the thermostat to the appropriate Low Voltage Interface Board terminals:
  - Connect a wire from thermostat terminal TB2- 2 (High fan speed) to the HI terminal
  - Connect a wire from thermostat terminal TB2- 3 (Med fan speed) to the Med terminal
  - Connect a wire from thermostat terminal TB2- 24 (Low fan speed) to the Low terminal
- Remove Jumper JP1 to allow the remote mounted the 10K Return Air Sensor to operate.
- Mount the 10K Return Air Sensor (PN 107345501) above the filter through the knockout provided

Note: (2) For thermostats supplied by others refer to the manufacturer's installation literature and use this manual as a guideline only.

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MTA 158 Microprocessor Thermostat On/Off Controller

Group: **Applied Air Systems**
Part Number: **910102990**
Date: **August 2009**

Installation

⚠ DANGER

READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS THERMOSTAT.

Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/ OR PROPERTY DAMAGE.

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To avoid potential fire and/ or explosion do not use in potentially flammable or explosive atmospheres.

Retain these instructions for future reference. You must review your application and national and local codes to ensure that your installation will be functional and safe.

⚠ CAUTION

Care should be used to avoid electrostatic discharge to the microprocessor.

This unit has configuration jumpers. You may need to reconfigure this thermostat for your application.

1. Install the thermostat with the two furnished mounting screws to a standard 4-11/16" x 2-1/8" square device box with a 2" x 4" adapter ring.
2. For wall installations, mount the thermostat on an inside wall approximately 5 feet above the floor. The location should provide circulation at average room temperature. Avoid direct sunlight or sources of hot or cold air in the room or wall.
3. Remove the cover. Mount thermostat base assembly to the outlet box using the screws provided, tighten the screws evenly but do not over tighten. Connect wires as shown in the appropriate wiring diagram for your thermostat style.
4. To use a remote sensor on units with local sensing capability, remove jumper JP-1 to disable local sensing. Failure to remove JP-1 will cause improper operation of the thermostat.

Figure 1: Wiring Diagram for On/Off Ouput Configuration

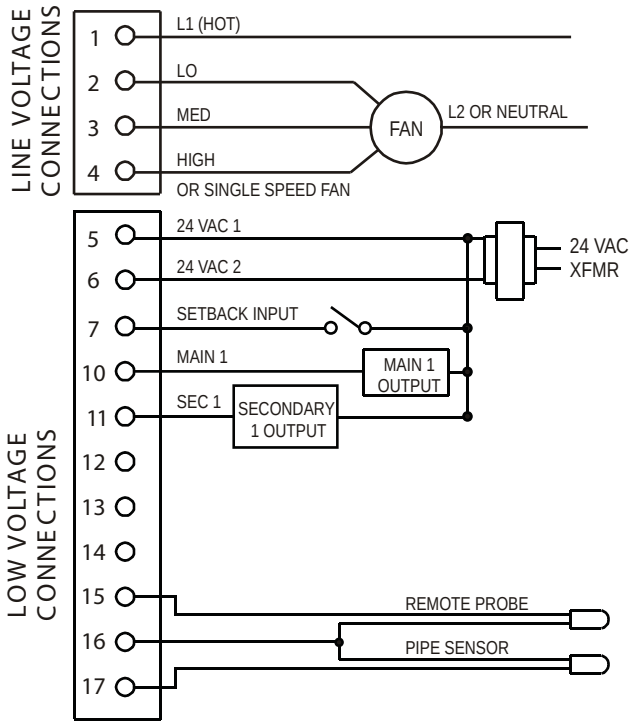


Table 1: MTA 158 Operation*

Output	Off with Demand	On with Demand
Main 1 Terminal 10	On at temperature demand	On at Temperature Demand
Main 2 (Terminal 12)	NA	NA
Secondary (Terminal 11)	Summer: Off with heat demand Winter: Disabled	Summer: On wtih heat demand Summer: Disabled
Secondary 2 (Terminal 13)	NA	NA

Note: * Operation determined by configuration. See Dip Switch Configuration Table.

5. Remove the LCD plastic protective film. Reinstall the cover assembly. Install the cover locking screw provided in the hole at the left side of the control enclosure to complete the installation.
6. Checkout: After wiring and installation are complete, energize the system and check the operation. Adjust the thermostat as necessary to complete at least one cycle. Be sure the thermostat and all other equipment are functioning correctly.

Thermostat Operation

These thermostats are designed to control On-Off, N.O. and N.C. valves, relays and Erie® three wire floating valves. These units may include a fan switch with one or more fan speed selections.

Mode Button Operation

OFF: All thermostat outputs are off, fan is still operational if connected to manual fan speed switch.

AUTO: The thermostat automatically selects heating or cooling mode depending on the set point and room temperature. The appropriate HEAT or COOL indicator is enabled in addition to AUTO. A 3°F dead-band is provided to prevent short cycling between heating and cooling modes. After change-over the control points automatically shift so that the heating off-point or the cooling off-point equals the set point temperature.

COOL: The thermostat operates as a cooling-only thermostat. The heating outputs are disabled.

HEAT: The thermostat operates as a heating-only thermostat. The cooling outputs are disabled.

If constructed without a mode button, the thermostat operates in Auto mode, subject to configuration of the 2/4 pipe jumper and pipe sensor input.

Fan Speed Switch Operation

Fan speed is determined by manual selection from fan switch OFF to HIGH, MEDIUM and/ or LOW. In units with the Cycling Fan Option (demand output), the Fan operation (CYCLING vs. CONTINUOUS) is determined by application connections. In OFF position all outputs are off and display blank.

Up/ Down Arrow Operation

A first touch of either arrow will display the set point (a single set point is employed for both heating and cooling). Continued pressure on either arrow will scroll the set point to new values. After three seconds with no pressure on either arrow, the selected set point becomes effective and the display of the room temperature resumes.

Setback Operation

Connection of the Setback Input to 24 VAC 1 will force the control into unoccupied mode (see wiring diagram). Pressing an arrow key or the mode button on the thermostat cover will disable the setback input for one hour.

Pipe Sensor Operation

If cold water is detected, the system will operate in summer mode and the Main output will be cooling. If hot water is detected, the system will operate in winter mode, the Main output will be heating and First Stage Secondary Output will be disabled. In the case of an ambiguous reading, neither hot nor cold, the thermostat will initiate a purge cycle.

Ratings

Table 2: Fan and system switches

Voltage Rating	Inductive		Resistive Amps	Pilot Duty	Thermostatic Switching
	FLA	LRA			
24 VAC	N.A.	N.A.	N.A.	24 VA	10 VA
120 VAC	5.8	34.8	6.0	125 VA	NA
240 VAC	2.9	17.4	5.0	125 VA	NA
277 VAC	2.4	14.4	4.2	125 VA	NA

Service Menu

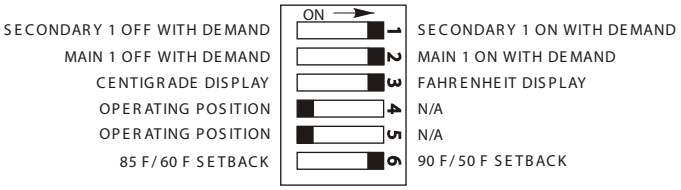
Access: Press UP and DOWN arrows for 5 seconds.

Menu Selection: Select 1 to 5 by pressing the mode button or by pressing the UP and DOWN arrows simultaneously.

Adjust Value: Use UP or DOWN arrow.

Item #	Function	Range	Default
1	Zone Temp Offset	-5.1 F to 5.1 F	0F
2	Valve Stroke Time	30 sec. To 5 min.	120 sec.
3	Fan Delay to OFF	0 to 10 Minutes	0 Sec.
4	Compressor Minimum Off Time	30 Sec. To 10 min.	120 Sec.
5	Purge Cycle	0 = Time Based 1 = Temperature Based	1

Figure 2: Dipswitch Configuration



Example: This Dip Switch Is Configured For On With Demand, °F Display, On-Off Operation And 90/50 F Setback.
NOTE: Thermostat power must be cycled for changes in dip switch configuration to take effect.

Figure 3: Circuit Board Jumpers

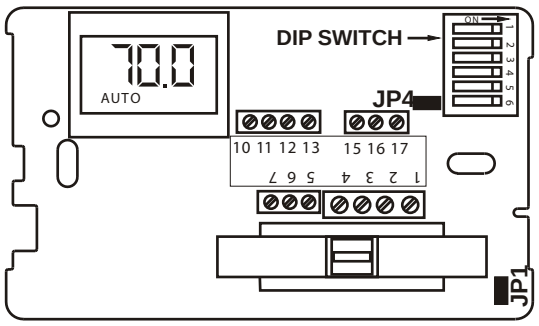


Table 3: Circuit Board Jumper Configuration

Jumper Designation	Jumper Installed ON	Jumper Removed
JP1	Local Sensing	Remote Sensing
JP4	2 Pipe System*	4 Pipe System

Application Notes

1. When no pipe sensor is used the main output controls cooling and the secondary output controls heating.
2. The pipe sensor should be mounted on the main coil input for water system operation and in the main duct system for forced air operation.
3. The set point and operating mode will be retained on a loss of power.
4. When using either a remote probe or pipe sensor, run wiring away from any electrical motors or power wiring.

Power-Up Operating Sequence

Upon application of power, an MTA158 will go directly to normal operation.

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MTB 158 Microprocessor Thermostat On/Off and 3-Wire Controller

Group: **Applied Air Systems**
Part Number: 910102991
Date: **November 2010**

⚠ DANGER

READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS THERMOSTAT.

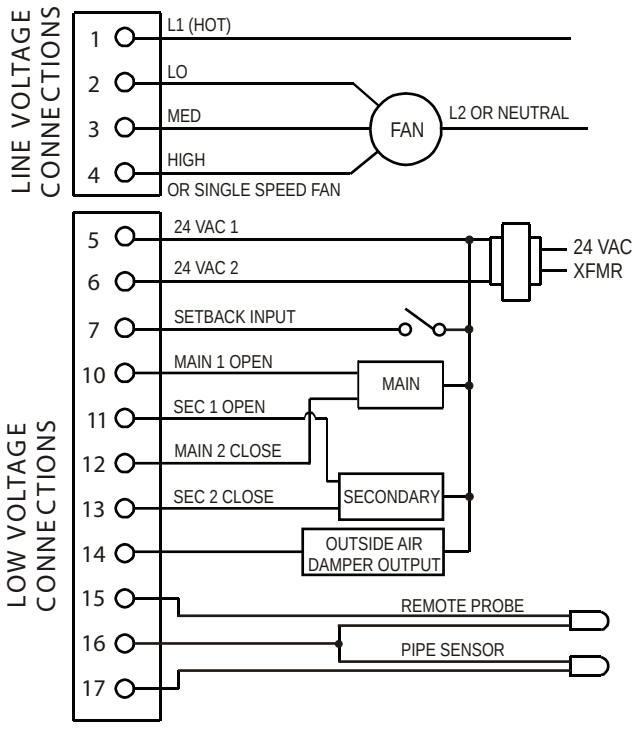
Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/ OR PROPERTY DAMAGE.

To avoid electrical shock or damage to equipment, disconnect power before installing or servicing. Use only wiring with insulation rated for full thermostat operating voltage. Use copper wire only. Insulate or wirenut all un-used leads. Any wiring, including the remote probe,may carry the full operating voltage of the thermostat.

To avoid potential fire and/ or explosion do not use in potentially flammable or explosive atmospheres.

Retain these instructions for future reference. You must review your application and national and local codes to ensure that your installation will be functional and safe.

Figure 1: Wiring Diagram for 3-Wire Valve Configuration



⚠ CAUTION

Care should be used to avoid electrostatic discharge to the microprocessor.

This unit has configuration jumpers. You may need to reconfigure this thermostat for your application.

Figure 2: Wiring Diagram for On/Off Ouput Configuration

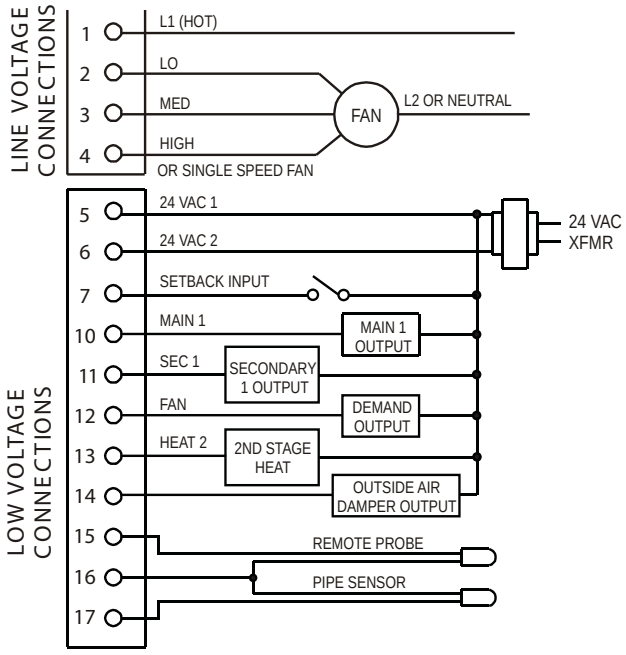


Table 1: Ratings

Voltage Rating	Fan and system switches				Thermostatic Switching (Pilot Duty)
	Inductive		Resistive Amps	Pilot Duty	
	FLA	LRA			
24 VAC	N.A.	N.A.	N.A.	24 VA	10 VA
120 VAC	5.8	34.8	6.0	125 VA	NA
240 VAC	2.9	17.4	5.0	125 VA	NA
277 VAC	2.4	14.4	4.2	125 VA	NA

Installation

1 Install the thermostat with the two furnished mounting screws to a standard 4-11/16" x 2-1/8" square device box with a 2" x 4" adapter ring.

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2 For wall installations, mount the thermostat on an inside wall approximately 5 feet above the floor. The location should provide circulation at average room temperature. Avoid direct sunlight or sources of hot or cold air in the room or wall.

3 Remove the cover. Mount thermostat base assembly to the outlet box using the screws provided, tighten the screws evenly but do not over tighten. Connect wires as shown in the appropriate wiring diagram for your thermostat style.

4 To use a remote sensor on units with local sensing capability, remove jumper JP-1 to disable local sensing. Failure to remove JP-1 will cause improper operation of the thermostat.

5 Remove the LCD plastic protective film. Reinstall the cover assembly. Install the cover locking screw provided in the hole at the left side of the control enclosure to complete the installation.

6 Checkout: After wiring and installation are complete, energize the system and check the operation. Adjust the thermostat as necessary to complete at least one cycle. Be sure the thermostat and all other equipment are functioning correctly.

Thermostat Operation

These thermostats are designed to control On-Off, N.O. and N.C. valves, relays and three-wire floating valves. These units may include a fan switch with one or more fan speed selections.

Table 2: Main and Secondary Output Operation*

Output	3-Wire Floating	Off with Demand	On with Demand
Main 1 Terminal 10	Powers main valve open	On at temp demand	On at temp demand
Main 2 (Terminal 12)	Powers main valve closed	Cycles on with demand	Cycles on with demand
Secondary (Terminal 11)	Powers secondary valve open	Summer: Off with heat demand Winter: Disabled	Summer: On with heat demand Winter: Disabled
Secondary 2 (Terminal 13)	Powers secondary valve closed	On at second stage heating demand	On at second stage heating demand

Note: * Operation determined by configuration. See Dip Switch Configuration Table.

Mode Button Operation

OFF: All thermostat outputs are off, fan is still operational if connected to manual fan speed switch.

AUTO: The thermostat automatically selects heating or cooling mode depending on the set point and room temperature. The appropriate HEAT or COOL indicator is enabled in addition to AUTO. A 3°F dead-band is provided to prevent short cycling between heating and cooling modes. After change-over the control points automatically shift so that the heating off-point or the cooling off-point equals the set point temperature.

COOL: The thermostat operates as a cooling-only thermostat. The heating outputs are disabled.

HEAT: The thermostat operates as a heating-only thermostat. The cooling outputs are disabled.

If constructed without a mode button, the thermostat operates in Auto mode, subject to configuration of the 2/4 pipe jumper and pipe sensor input.

Fan Speed Switch Operation

Fan speed is determined by manual selection from fan switch OFF to HIGH, MEDIUM and/ or LOW. In units with the Cycling Fan Option (demand output), the Fan operation (CYCLING vs. CONTINUOUS) is determined by application connections. In OFF position all outputs are off and display blank.

Up/ Down Arrow Operation

A first touch of either arrow will display the set point (a single set point is employed for both heating and cooling). Continued pressure on either arrow will scroll the set point to new values. After three seconds with no pressure on either arrow, the selected set point becomes effective and the display of the room temperature resumes.

Setback Operation

Connection of the Setback Input to 24 VAC 1 will force the control into unoccupied mode (see wiring diagram). Pressing an arrow key or the mode button on the thermostat cover will disable the setback input for one hour.

Pipe Sensor Operation

If cold water is detected, the system will operate in summer mode and the Main output will be cooling. If hot water is detected, the system will operate in winter mode, the Main output will be heating and First Stage Secondary Output will be disabled. In the case of an ambiguous reading, neither hot nor cold, the thermostat will initiate a purge cycle.

Three Wire Floating Valve Operation

Open and Close outputs are used to position the valve. Stroke time is factory set at two minutes. Outputs are off after reaching full on or off position. Valves are periodically reset for accuracy.

Outside Air Damper Operation

This output is ON any time the control is turned ON.

Application Notes

1. When no pipe sensor is used the main output controls cooling and the secondary output controls heating.
2. The pipe sensor should be mounted on the main coil input for water system operation and in the main duct system for forced air operation.
3. The set point and operating mode will be retained on a loss of power.
4. When using either a remote probe or pipe sensor, run wiring away from any electrical motors or power wiring.

Service Menu

Access: Press UP and DOWN arrows for 5 seconds.

Menu Selection: Select 1 to 5 by pressing the mode button or by pressing the UP and DOWN arrows simultaneously.

Adjust Value: Use UP or DOWN arrow.

Table 3: Service Menu Functions

Item #	Function	Range	Default
1	Zone Temp Offset	-5.1 F to 5.1 F	0F
2	Valve Stroke Time	30 sec. To 5 min.	120 sec.
3	Fan Delay to OFF	0 to 10 Minutes	0 Sec.
4	Compressor Minimum Off Time	30 Sec. To 10 min.	120 Sec.
5	Purge Cycle	0 = Time Based 1 = Temperature Based	1

Figure 3: Circuit Board Jumpers

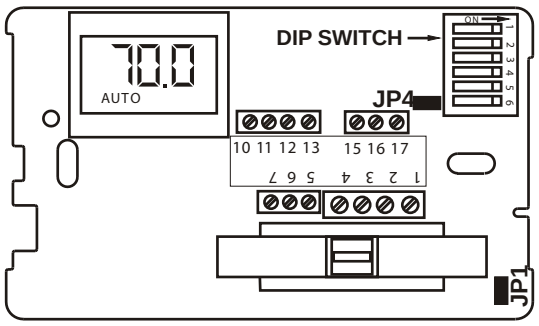

Table 4: Circuit Board Jumper Configuration

Jumper Designation	Jumper Installed ON	Jumper Removed
JP1	Local Sensing	Remote Sensing
JP4	2 Pipe System*	4 Pipe System

Power-Up Operating Sequence

Upon application of power, an MTA158 will go directly to normal operation.

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MT 168 0-10 VDC/4-20mA Thermostat

Group: **Applied Air Systems**
Part Number: 910102992
Date: **August 2009**

Installation

⚠ DANGER

READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS THERMOSTAT.

Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/ OR PROPERTY DAMAGE.

To avoid electrical shock or damage to equipment, disconnect power before installing or servicing. Use only wiring with insulation rated for full thermostat operating voltage. Use copper wire only. Insulate or wire-nut all un-used leads. Any wiring, including the remote probe, may carry the full operating voltage of the thermostat.

To avoid potential fire and/ or explosion do not use in potentially flammable or explosive atmospheres.

Retain these instructions for future reference. You must review your application and national and local codes to ensure that your installation will be functional and safe.

⚠ CAUTION

Care should be used to avoid electrostatic discharge to the microprocessor.

This unit has configuration dip switches and jumpers. You may need to reconfigure the thermostat for your application.

1. Install the thermostat with the two furnished mounting screws to a standard 4-1/16" x 2-1/8" square device box with a 2" x 4" adapter ring.
2. For wall installations, mount the thermostat on an inside wall approximately 5 feet above the floor. The location should provide circulation at average room temperature. Avoid direct sunlight or sources of hot or cold air in the room or wall.

Figure 1: Mounting

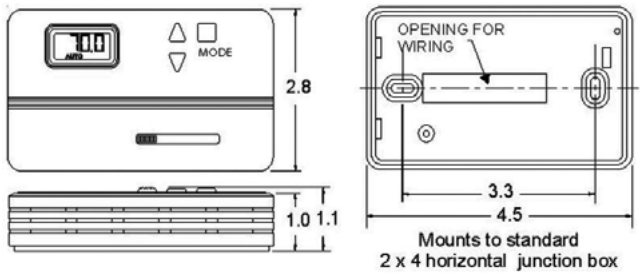
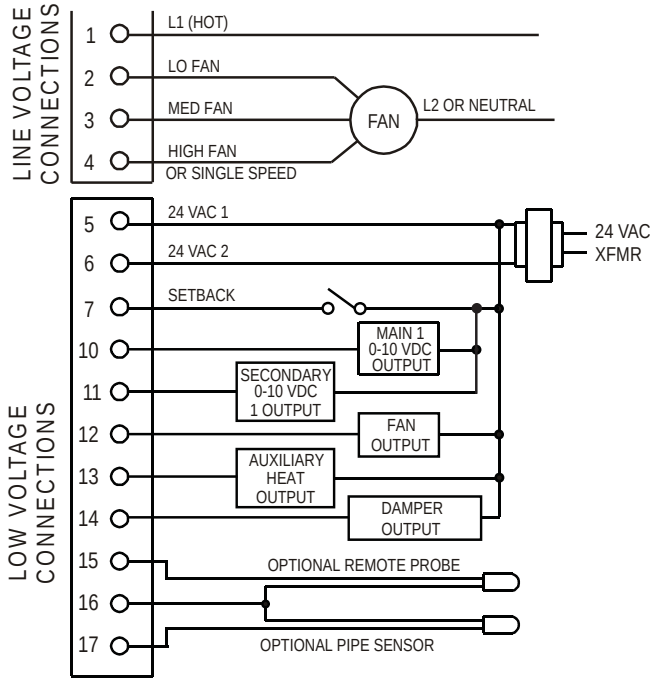


Figure 2: Typical Wiring*



Note: * Specific models may have fewer connections.

3. Remove the cover. Mount thermostat base assembly to the outlet box using screws provided. Tighten the screws evenly but do not overtighten. Connect wires per wiring diagram.
4. To use a remote sensor on units with local sensing capability, remove jumper JP-1 to disable local sensing. Failure to remove JP-1 will cause improper operation of thermostat.

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5 Connecting a jumper between terminals 16 and 17 will disable the secondary output and change the main output to heat mode.

6 Connection of a 24 VAC set-back signal will force the control into unoccupied mode (see diagram). Pressing an arrow key or the mode buttons on the thermostat cover will disable the setback input for one hour.

7 Remove the LCD plastic protective film to complete the installation. Reinstall the cover assembly. Install cover locking screw provided.

8 Checkout: After wiring and installation are complete, energize the system and check the operation. Adjust the thermostat as necessary to complete at least one cycle. Be sure the thermostat and all other equipment are functioning correctly.

Electrical Ratings

Table 1: Fan switch (terminals 1-4) line voltage connections

Voltage Rating	Inductive		Resistive Amps	Pilot Duty	Thermostatic Switching
	FLA	LRA			
24 VAC	N.A.	N.A.	N.A.	24 VA	10 VA
120 VAC	5.8	34.8	6.0	125 VA	NA
240 VAC	2.9	17.4	5.0	125 VA	NA
277 VAC	2.4	14.4	4.2	125 VA	NA

Application Notes

1 When no changeover pipe sensor is used, the main output controls cooling and the secondary output controls heating.

2 The fan output, terminal 12, is energized whenever there is a demand for heating or cooling. This output can be connected to a relay that can be used to provide fan cycling to terminal 1.

3 The changeover pipe sensor should be mounted on the main coil input for water system operation and in the main duct system for forced air operation.

4 The set point and operating mode will be retained on a loss of power.

5 When using either a remote probe or pipe sensor, run wiring away from any electrical motors or power wiring.

6 The auxiliary heat output supplies a 24 VAC signal with call for heat. This output is shipped configured for staged heat.

7 The thermostat is shipped with all dip switches in the "ON" (closed) position.

8 The damper output is ON when mode is AUTO, HEAT or COOL. Damper is OFF in set back.

Thermostat Operation

These thermostats are designed to control 0-10 VDC/4-0 mA valves. These units may include a fan switch with one or more fan speed selections.

Mode Button Operation

OFF: All thermostat outputs are off, fan is still operational if connected to a manual fan switch.

AUTO: The thermostat automatically selects heating or cooling mode depending upon the relationship of the setpoint and the room temperature. The appropriate HEAT or COOL indicator is enabled in addition to AUTO. A 3°F dead band is provided to prevent short cycling between heating and cooling modes. After changeover, the control points automatically shift so that the heating off-point equals the set point temperature or the cooling off-point equals the set point temperature.

COOL: The thermostat operates as a cooling only thermostat. The heating outputs are disabled.

HEAT: The thermostat operates as a heatin- only thermostat. The cooling outputs are disabled.

Fan Speed Switch Operation

Fan speed is determined by manual selection from fan switch OFF to HIGH, MEDIUM and/or LOW. In the OFF position, all outputs are off and the display is blank.

Up/Down Arrow Operation

A first touch of either arrow will display the setpoint (a single set point is employed for both heating and cooling). Continued pressure on either arrow will scroll the setpoint to new values. After three consecutive seconds on either arrow, the selected setpoint becomes effective and the display of the room temperature resumes.

Configuration

Table 2: Circuit Board Jumper Configuration

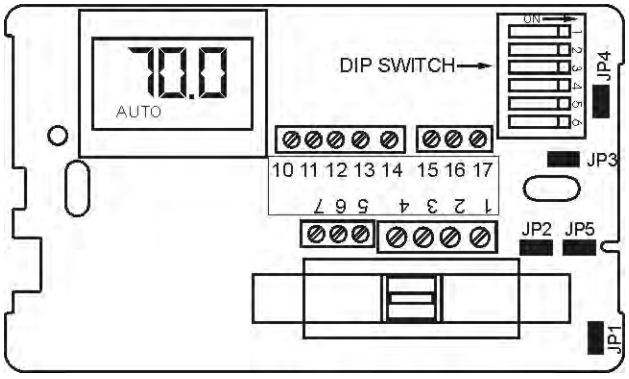
Jumper	Closed On*	Open Off
JP1	Local Sensing	Remote Sensing
JP2	2 Pipe System	4 Pipe System
JP3	Factory Use Only	
JP4	0-10 VOC Main Output	4-20 mA Main Output
JP5	0-10 VOC Secondary Output	4-20 mA Secondary Output

Table 3: Dip Switch Configuration

Switch	Closed On*	Open Off
1	Not Used	Not Used
2	Staged Heat 3°F Diff. (Term. 13)	Aux. Heat No Diff. (Term. 13)
3	F Display	C Display
4	Main & Sec. Outputs 0-10 VOC (Term. 10 & 11) requires JP4 & JP5	Main & Sec. Outputs 4-20 mA (Term. 10 & 11) Remove JP4 & JP5
5	Operating Position	Not Used
6	Setback= 90°F & 50°F	Setback = 85°F & 60°F

Note: * On is with the dip switch handle to the right. See diagram below.

Figure 3: Circuit Board



Service Menu:

Access: Press UP and DOWN arrows for 5 seconds.

Menu Selection: Select 1 to 5 by pressing the mode button or by pressing the UP and DOWN arrows simultaneously.

Adjust Value: Use UP or DOWN arrow.

Table 4: Service Functions

Item #	Function	Range	Default
1	Zone Temp Offset	-5.1 F to 5.1 F	0 F
2	Valve Stroke Time	30 sec. to 5 min.	120 sec.
3	Fan Delay to OFF	2 to 10 minutes	120 sec.
4	Compressor Minimum Off Time	30 seconds to 10 minutes	120 sec.
5	Purge Cycle	0 = time based 1 = temperature based	1

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Installation and Maintenance Manual	IM-846
T170 Thermostat	Group: **Fan Coil**
	Part Number: 910102993
	Date: July 2006

24 VAC/120–277 VAC

3-Speed Fan Control (Continuous or Cycling) or Staged Fan Control

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800-432-1342 www.DaikinApplied.com

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Installation Instructions

⚠ WARNING

- BEFORE ATTEMPTING TO INSTALL, OPERATE, OR SERVICE THIS THERMOSTAT, CAREFULLY READ THESE INSTRUCTIONS.
- Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH, AND/OR PROPERTY DAMAGE.
- To avoid potential fire and/or explosion, do not use in potentially flammable or explosive atmospheres.
- Retain these instructions for future reference. This product, when installed, is part of an engineered system whose specifications and performance characteristics are not designed or controlled by Daikin. You must review your application and national and local codes to assure that your installation is functional and safe.

⚠ DANGER

Hazardous voltage. To avoid electrical shock or damage to equipment, disconnect power before installing or servicing. Failure to follow these instructions will result in death or serious injury.

Thermostat Model and Part Number

Daikin offers two different thermostats depending on the fan speed control used (Table 2).

Table 1: Thermostat model and part numbers

Thermostat Model #	Daikin Part #	Fan Speed Control
TA170-001	**107345335**	3-Speed Fan Control
TB170-001	**107345336**	Staged Fan

Note – For a list of thermostat features, refer to ED 3611.

Optional Occupancy Detection Sensors/Kits

In addition to the T170 thermostat, Daikin offers optional occupancy detection sensors (see page 71) that can be ordered and used in conjunction with the thermostat. When ordering, use the associated kit number(s) provided in Table 2.

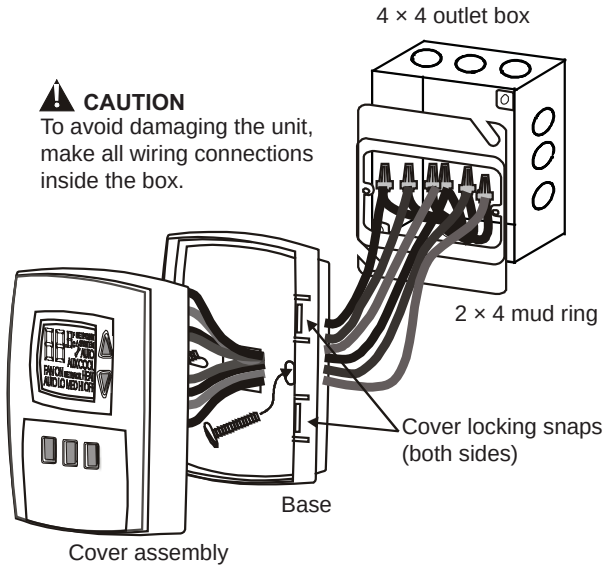
Table 2: Occupancy sensor model and kit numbers

Sensor Model #	Daikin Kit #
SA200-001	**6677877211**
SB200-001	**6677877311**
SD200-001	**6677877411**
SB200-002	**6677877511**

Mounting and Wiring the Thermostat

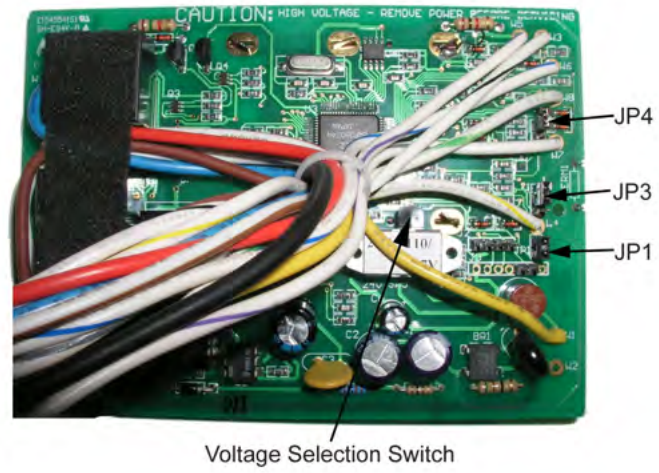
The thermostat base mounts to a field provided 4″ × 4″ outlet box with a 2″ × 4″ mud ring (Figure 1). The thermostat cover assembly mounts to the thermostat base.

Figure 1: Mounting the thermostat


4 × 4 outlet box
CAUTION
To avoid damaging the unit, make all wiring connections inside the box.
2 × 4 mud ring
Cover locking snaps (both sides)
Base
Cover assembly

1. Disconnect power before installing or servicing.
2. Run line voltage wiring (and low voltage wiring if applicable) into the field provided outlet box and mud ring (Figure 1).
3. Locate all connections within the mud ring/connection box and wire nut all unused wires.
4. Remove the thermostat cover assembly from its base to gain access to the circuit board (Figure 2).

Figure 2: Circuit board



5 On the circuit board, set the voltage selection switch (Figure 2) to the appropriate voltage for the application

- 24 V = 24 VAC
- 110–277 V = 120, 240, or 277 VAC.

Note: The circuit board is shipped with the voltage selection switch in the 110-227 V position. For 24 VAC use, the switch must be in the 24 V position.

CAUTION

Before applying power, the voltage selection switch must be in the appropriate position. Failure to select the correct voltage can cause thermostat malfunction or permanently damage the thermostat.

6 The circuit board is also equipped with configuration jumpers (JP1, JP3, and JP4 in Figure 2). Depending on the application, it may be necessary to reconfigure the following jumpers:

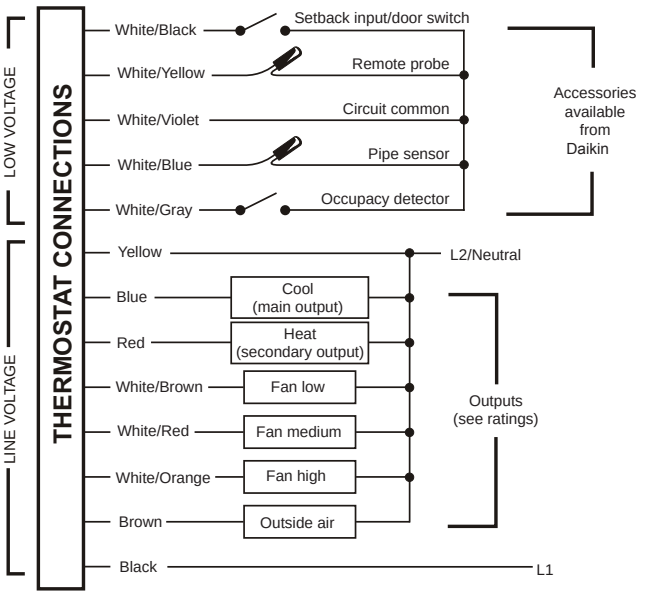
- **JP4:** 2/4 Pipe Sensor Jumper - This jumper selects between 2-pipe (jumper ON) and 4-pipe (jumper OFF) operation (see “Fan Operation” on page 69).
- **JP3:** Door/Window Switch Jumper - This jumper is shipped normally open. Placement of a jumper allows for occupancy detection and door/window switch only operation (see “Optional Occupancy Detection Equipment Operation” on page 71).
- **JP1:** Removal of this jumper allows the sensor to be located in a remote location.

CAUTION

To use a remote sensor on units with local sensing capability, remove jumper JP1 to disable local sensing. Failure to remove JP1 can cause improper operation of the thermostat with a remote probe installed.

7 Connect the color coded thermostat wires (Figure 3) to the line voltage wires located in the mud ring/connection box and secure the connections with wire nuts.

Figure 3: Wiring diagram



CAUTION

Use copper wire only. Insulate or wire nut all unused leads. Avoid electrostatic discharge to the thermostat.
Failure to do so can cause thermostat malfunction or permanently damage the thermostat.

8 Install the thermostat base to the mud ring/outlet box using two furnished mounting screws. Tighten the screws evenly but do not over tighten.

Note: An output ratings chart (Table 3) is located on the inside of the base.

Table 3: Output ratings

Output ratings					
Voltage	Inductive		Resistive amps	Pilot duty	HP
	FLA	LRA			
24 VAC	NA	NA	NA	24 VA	NA
120 VAC	5.8	34.8	6.0	125 VA	1/4
240 VAC	2.9	17.4	5.0	125 VA	1/4
277 VAC	2.4	14.4	4.2	125 VA	1/4

⚠ DANGER

Hazardous voltage. Combined load current is not to exceed 20 amps. Mount only to a grounded metallic box.
Low voltage wiring is Class 2. To avoid electrical shock or damage to equipment, disconnect power before installing or servicing. Failure to follow these instructions will result in death or serious injury.

9 With the base now secured, verify that the circuit board is firmly snapped into the cover and is not dislodged.

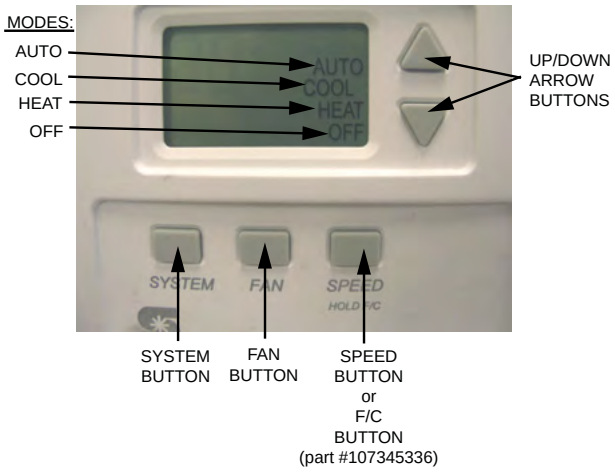
10 Install the cover assembly to the base, pressing firmly to engage the cover locking snaps.

Operation

Thermostat Button Operation

The thermostat interface (Figure 4) contains buttons for use in navigating to accompanying menus/screens and for performing specific operations. These buttons and operations are described below.

Figure 4: Thermostat interface (model #TA170-001 shown)



System Button Operation

The System button (Figure 4) contains and displays the following modes of operation:

OFF—All thermostat outputs are off. The fan is still operational if FAN ON is selected.

AUTO—The thermostat automatically selects heating or cooling mode depending on the set point and room temperature. If demand exists, the appropriate HEAT or COOL icon illuminates. A 3°F dead band is provided to prevent short cycling between heating and cooling modes. After changeover, the control point automatically shifts so that the control OFF point equals the set point temperature.

COOL—The thermostat operates as a cooling only thermostat.

HEAT—The thermostat operates as a heating only thermostat.

UP/Down Arrow Button Operation

Use the Up and Down arrow buttons (Figure 4) to increase or decrease the temperature.

Fan Button Operation

Use the Fan button (Figure 4) to control operation of the fan. In the ON position, the fan output operates continuously. In the AUTO position, the output cycles with demand. In the OFF position, all outputs are off.

Note – Model #TB170-001 (part #107345336) has staged fan control.

Speed Button Operation (TA170-001)

The fan Speed button (Figure 4) for model #TA170-001 (part #107345335) is determined by manually selecting HI, MED, or LO. Press and hold the Speed button for five seconds to toggle the displayed temperature from Fahrenheit to Celsius.

F/C Button Operation (TB170-001)

Model #TB170-001 (part #107345336) is configured for staged fan control and therefore utilizes a F/C button (Figure 4) instead of a Speed button. When pressed, the F/C button toggles between Fahrenheit and Celsius.

Verifying Thermostat Operation

To verify thermostat operation after mounting and wiring it, perform the following:

1. Energize the system.
2. Set the fan to ON.
3. Select each fan speed, if available, to verify operation.
4. Set the system button to AUTO or other available selection.
5. Using the UP arrow, adjust the temperature to more than 5°F above ambient temperature to cycle on heating.
6. Using the DOWN arrow, adjust the temperature to more than 5°F below ambient temperature to cycle on cooling.

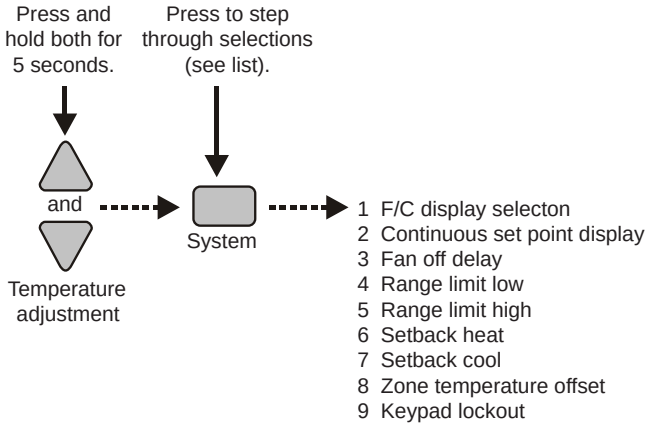
Thermostat Menu Functions

The thermostat menu contains nine functions which can be accessed using controls on the thermostat. Accessing the menu functions and details of each function are described below.

Menu Function Access

1. Press and hold the UP and DOWN arrow buttons (Figure 5) for five seconds.
2. The current display clears and the number “1” appears.
3. Press the SYSTEM button to scroll to the next item number.
4. Use the UP and DOWN buttons to make changes within the selected number.

Figure 5: Thermostat menu



Menu Functions

1. **F/C (Fahrenheit/Celsius) display selection**
   When this function is selected, the F and C icons appear and the selected icon flashes. To toggle between F or C, press the up or down arrow button.
2. **Continuous set point display**
   When this function is selected, the F or C icon, current digits, and the set point icon appear. If the Continuous set point display is enabled, the set point icon flashes. To toggle between continuous display of set point and display of zone temperature, press the up or down arrow button.
3. **FAN off delay**
   When this function is selected, the FAN, OFF, and digits appear. The digits represent the number of seconds the fan stays on after the heating and cooling outputs are turned off. To increase or decrease the value from 0–255 seconds, press the up or down arrow button.
4. **Range limit low**
   When this function is selected, the current minimum range setting, the SET POINT icon. and the LO icon appear. To increase or decrease the value, press the up or down arrow button.
5. **Range limit high**
   When this function is selected, the current maximum temperature range adjustment, SET POINT icon, and LO icon appear. To increase or decrease the value, press the up or down arrow button.
6. **Set back heat**
   When this function is selected, the current temperature range adjustment, the SET BACK icon, and the HEAT icon appear. To increase or decrease the value, press the up or down arrow button.
7. **Set back cool**
   When this function is selected, the current Cool setback value, the SET BACK icon, and the COOL icon appear. To increase or decrease the value, press the up or down arrow button.
8. **Zone temperature offset**
   When this function is selected, the numeric ones and tenths (0.0) appear with a leading minus sign. To increase or decrease the value +/– 9°F, press the up or down arrow button. Increments are made in 1°F and 0.5°C.
9. **Keypad lockout**
   When this function is selected, the ON and OFF icons appear. The enabled icon flashes. OFF is the default. ON disables the keypad except for entry into the service menu. To increase or decrease the value, press the up or down arrow button.

Note – In the event of a power failure, these values are stored and can be recalled.

Condensate Overflow Interrupt

The remote probe input can be used with a condensate overflow switch (CO), either in conjunction with a remote probe (normally closed CO switch, Figure 6), or with local sensing (normally open CO switch, Figure 7). When the condensate switch activates, the thermostat displays a service wrench icon and disables all outputs.

Figure 6: Remote probe installation

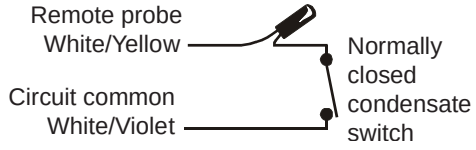
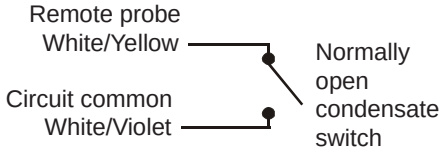


Figure 7: Local sensor installation



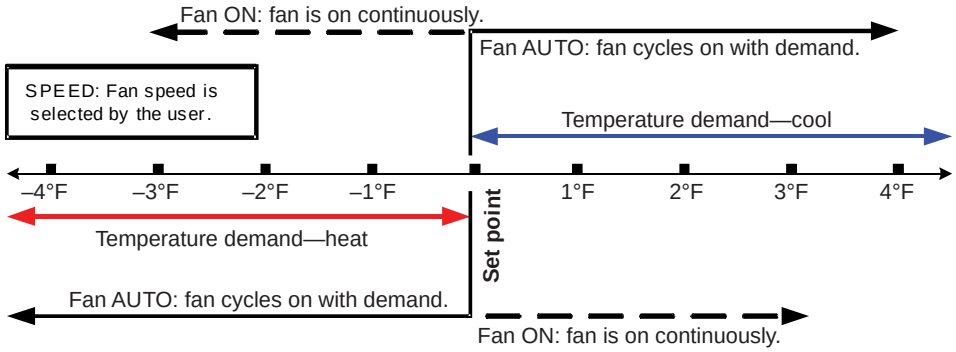
Fan Operation

The thermostat may be factory configured for standard or staged fan operation.

Standard Fan Configuration (TA170-001)

Units with standard fan operation (Figure 8) have a selectable fan Speed button.

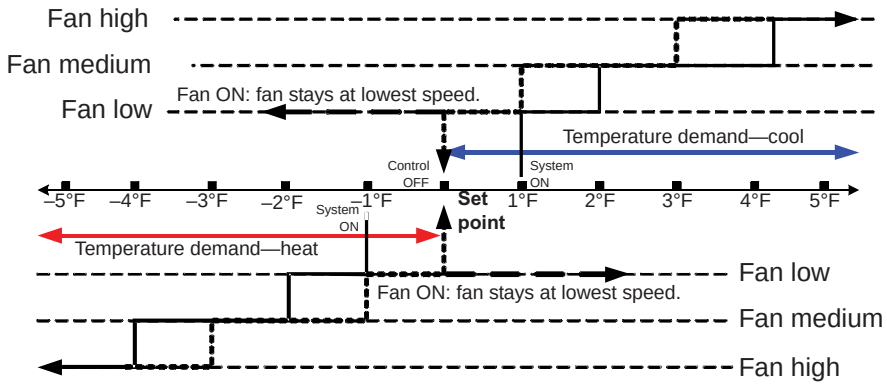
Figure 8: Standard fan operation



Staged Fan Configuration (TB170-001)

Factory configuration is available for staged fan operation (Figure 9) to provide occupant comfort while using the most effective fan speed.

Figure 9: Staged fan operation



Controlled Off Factory Configuration

A factory configuration may be provided for minimum heating and cooling requirements. Using this configuration, the HEAT and COOL outputs are automatically cycled on at the heat setback limit. Your thermostat may not have this feature.

Fancoil Operation

Fancoil operation is either a 2-pipe or 4-pipe configuration which is determined by jumper selection JP4 (see “Mounting and Wiring the Thermostat” on page 65).

2-Pipe Operation

In this configuration, the thermostat permanently disables the secondary output and disables the fan from cycling in an invalid mode. The main output configuration is dependent on the pipe sensor input. With a pipe sensor connected, the thermostat automatically selects heating or cooling depending on the sensed water temperature. If the pipe sensor input is open (unconnected), the main output only cools. If the pipe sensor input is shorted, the main output only heats. Normal thermostat default is for 4-pipe operation. For 2-pipe operation, install a jumper on JP4.

4-Pipe Operation

In this configuration, both the main output (COOL) and the secondary output (HEAT) are available. These both cycle ON depending on the mode of the thermostat. With a pipe sensor connected, the thermostat automatically changes the main output to heat and disables the secondary output if the main coil water is hot. For 4-pipe operation, the JP4 jumper is removed.

Pipe Sensor Operation

A pipe sensor can be connected when the thermostat is configured for either 2-pipe or 4-pipe configuration. The pipe sensor is used to determine the water temperature in the main coil, which should be connected to the primary output.

Pipe sensor input—use a 10K Remote Probe or a standard ON-Off Aquastat for summer/winter changeover.

Purge Cycle

With a pipe sensor connected, the thermostat initiates a purge cycle if the sensed water temperature is ambiguous (not adequately hot or cold). The sequence for purge cycle operation is as follows:

1. The thermostat has a call for heat or cooling.

   Note: If at any time the call goes away, the thermostat stops the purge cycle.

2. The thermostat checks the pipe sensor to verify water temperature.
3. If the water temperature is beyond 15°F of the set point, normal HVAC control occurs.
4. If the water temperature is not beyond 15°F of the set point, the thermostat checks to see if the water temperature is above 80°F or below 60°F.

   If yes, normal HVAC control occurs.

   If no, the thermostat opens the main output (COOL) for three minutes.
5. After the three minute purge cycle occurs, the thermostat checks to see if the water temperature is more than 15°F from the set point, or above 80°F, or below 60°F.

   If yes, normal HVAC operation occurs.

   If no, the valve is left open and the thermostat continues to search for a valid reading.

Note – If at any time the demand goes away, the thermostat will stop the purge cycle.

Table 4 shows output operation, depending on the sensed water temperature.

Table 4: Output operation

2-Pipe/4-Pipe selection	Water temperature	Output operation	
		Main output	Secondary output
2-pipe JP4 ON	Cold	Cooling only The fan does not cycle on with a heat demand.	Disabled
	Hot	Heating only The fan does not cycle on with a cool demand.	Disabled
4-pipe JP4 OFF	Cold	Cooling	Heating
	Hot	Heating only The fan does not cycle on with a cool demand.	Disabled

Setback Operation

In this configuration, the low level switch input normally is open. To enable setback operation, the JP3 jumper is removed (see “Mounting and Wiring the Thermostat” on page 65). The input will close and the thermostat heating and cooling setback limits can then be used as temperature control points. Fan operation in setback is cycled with demand. Press any thermostat key to override setback for one hour. Setback overrides any user setting except if the control is turned to OFF.

Optional Occupancy Detection Equipment Operation

The T170 thermostat can be used with optional S200 series occupancy detection equipment. Purchasing and installing this equipment to compliment the thermostat adds energy savings by setting back HVAC operation during occupied and unoccupied times. Optional detection equipment configurations and operation are described below.

SB200-001 Occupancy Sensor

The SB200-001 occupancy sensor (Figure 10) serves as an occupancy sensor for automatic control of a guest room HVAC system. It incorporates an innovative dual delay processor which allows the sensor to verify the nature of occupancies, and is capable of eliminating unnecessary actuations of the HVAC device due to unintentional passages or short time occupancies. The sensor may also serve as a slave sensor (Figure 11 on page 73).

The sensor switch is open in occupied mode and closed in unoccupied mode. An optional door and/or window switch (Figure 10) is open when the door/window is open and is closed when the door/window is closed.

Note – To use this configuration, a jumper must be installed to JP3 to allow occupancy input.

Note – An optional door and/or window switch (Figure 10) can be added for use with the SB200-001 sensor.

Operation

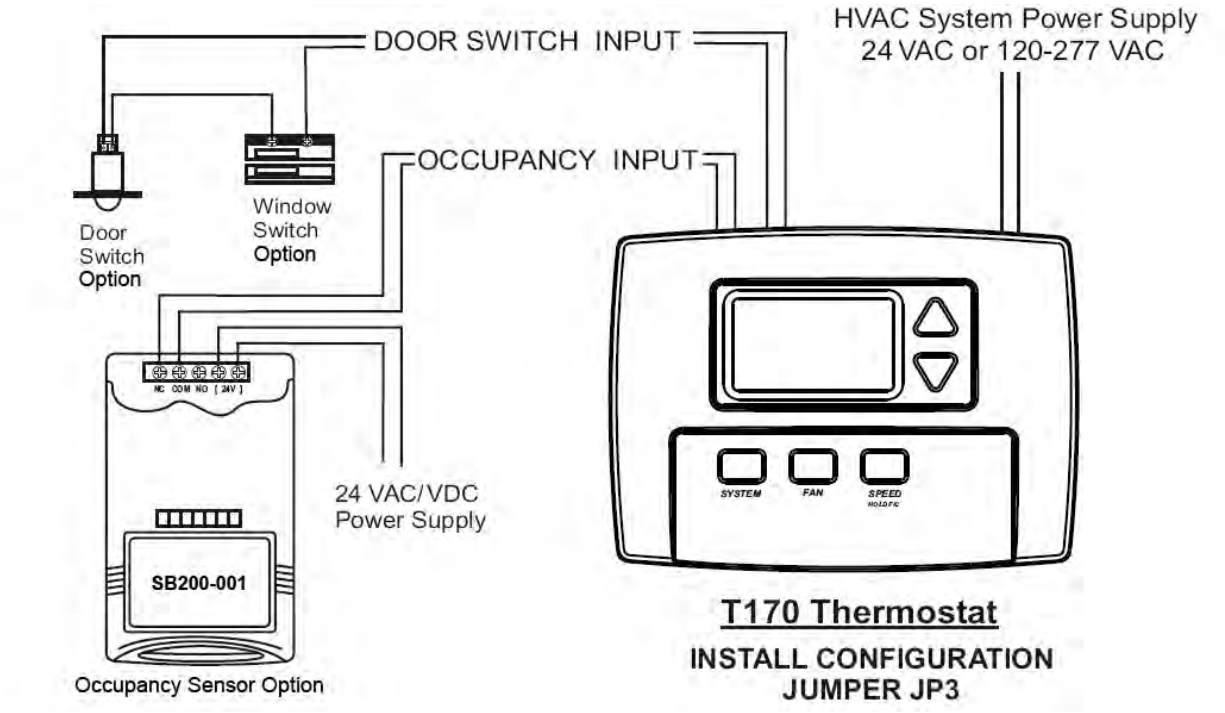
In an occupied mode, the thermostat operates normally and looks for a door open signal. When the door opens, the thermostat waits for a door close signal. If the door is open for more than two minutes, the thermostat turns the HVAC system outputs to OFF. During this two minute period, if any button is pressed on the keypad, the time delay is extended to ten minutes. The time delay can only be extended once. Once the HVAC outputs transition to OFF, a door closure is required to re-enable the outputs. When the door closes, the thermostat starts a two minute timer and tries to detect occupancy. If the timer expires and no occupancy is detected, the thermostat transitions to an unoccupied state. If occupancy is detected while the timer is running, the thermostat will remain in the occupied mode.

In an unoccupied mode, the thermostat sets heating and cooling set points to setback values as determined by factory or user settings. The fan is automatically set to cycle with demand. The thermostat continually monitors the occupancy sensor and will enter into occupied mode if occupancy is detected.

If the installation is only using a door/window switch, the thermostat will disable the HVAC outputs if this output is open for longer than two minutes.

To enable door/window switch only operation, install a jumper to JP3 (see “Mounting and Wiring the Thermostat” on page 65) and the occupancy input must be shorted to circuit common.

Figure 10: Optional equipment configuration #1



SD200-001 Occupancy Sensor

The SD200-001 occupancy sensor (Figure 11) serves as a master sensor for a guest room HVAC management system. The sensor provides HVAC operation according to occupancy status, as well as door/window switch monitoring, selectable high/low temperature setback, form-C output, slave sensor connectivity, and a five minute door open HVAC shut-off.

Note – To use this configuration, the jumper to JP3 is removed to allow setback input.

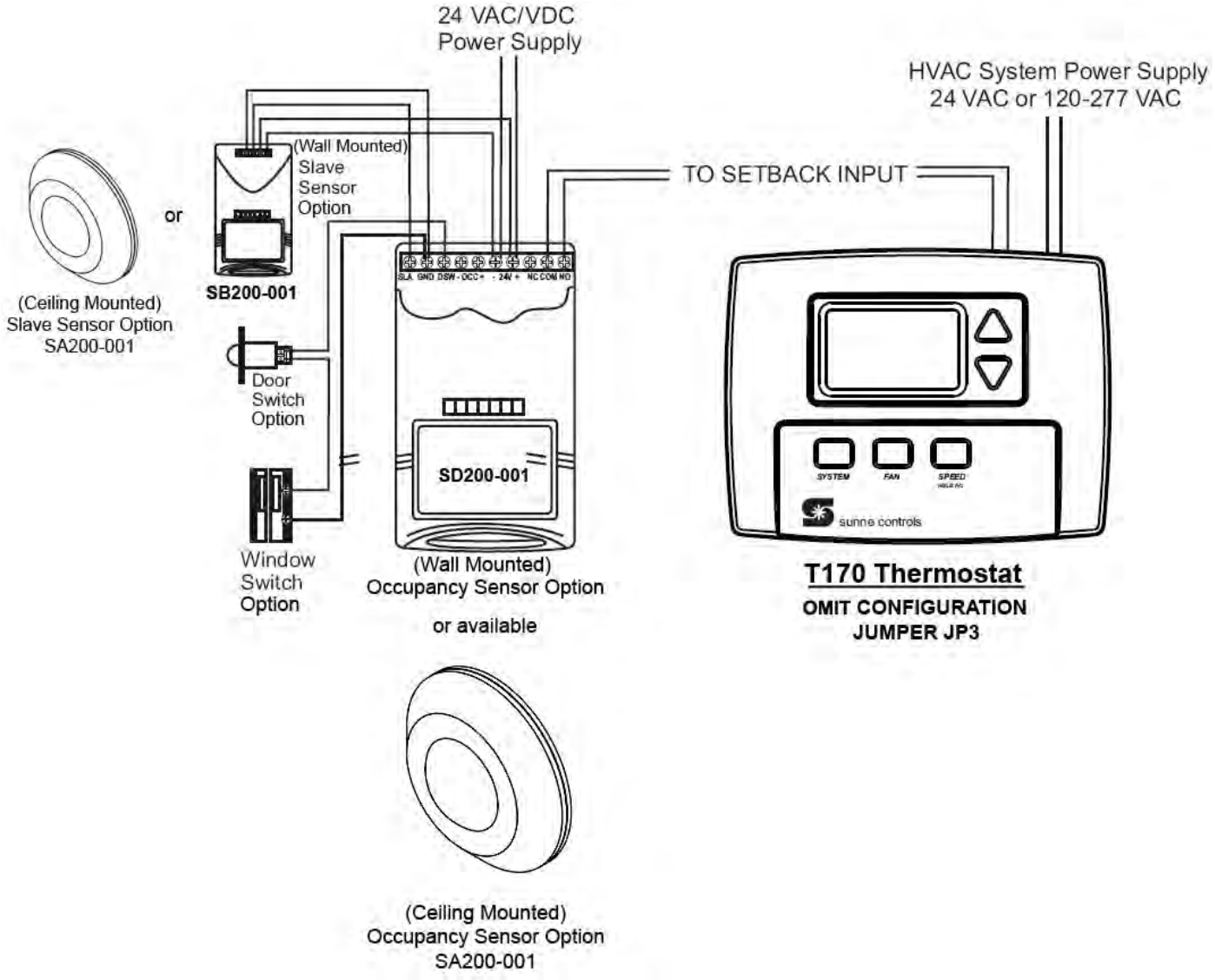
Note – An optional door and/or window switch (Figure 11) and slave sensor can be added for use with the SD200-001 sensor.

Operation

In an occupied mode, the SD200-001 occupancy sensor (Figure 11) and door switch use advanced microprocessor logic to determine occupancy. A door open signal will initiate occupancy status detection. If the sensor determines that a room is occupied, it will allow normal HVAC control. The sensor will wait for another door open signal before determining occupancy again.

In an unoccupied mode, the sensor continually monitors the room. Any occupancy detection will set the operation to occupied mode.

Figure 11: Optional equipment configuration #2



SD200-002 Occupancy Sensor

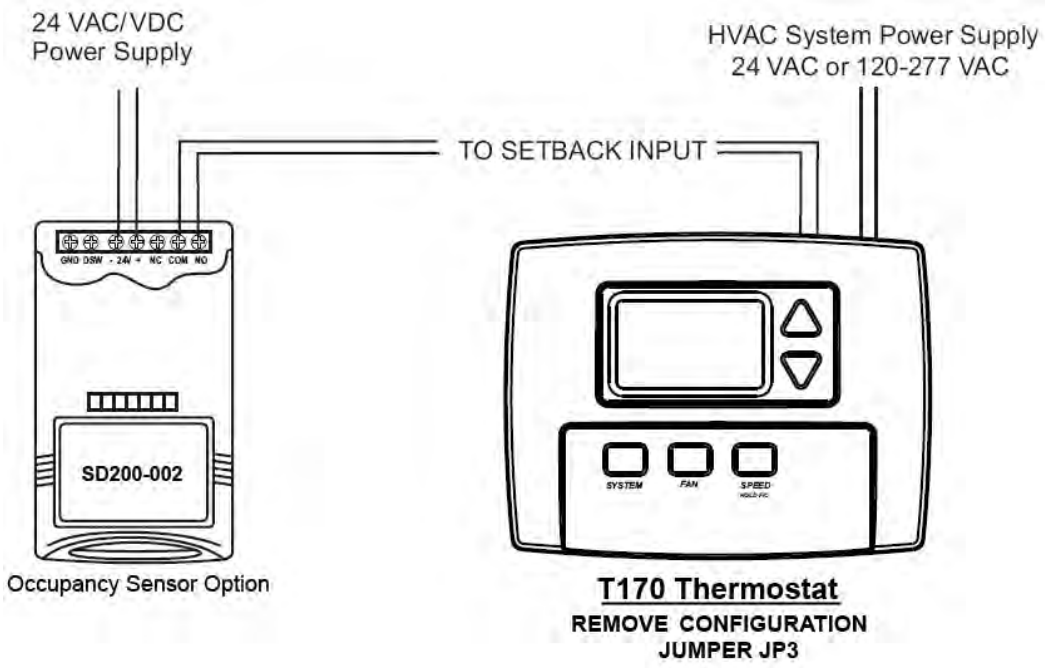
The SD200-002 occupancy sensor serves as a stand alone master sensor for a guest room HVAC management system. The sensor provides HVAC operation according to occupancy status, as well as selectable high/low temperature setback, form-C output, and a five minute door open HVAC shut-off. This system provides basic room setback and is ideal for control of HVAC in commercial spaces.

Note – To use this configuration, the jumper to JP3 is removed to allow setback input.

Operation

With each occupancy detection, an OFF delay is started and can be set to delay for up to 30 minutes.

Figure 12: Optional equipment configuration #3



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This document contains the most current product information as of this printing. For the most up-to-date product information, please go to www.DaikinApplied.com.

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Thermostat Conversion Kit

Group: **Applied Air Systems**
Part Number: 667757200
Date: May 2006

Safety Information

⚠ WARNING

The installation of this equipment shall be in accordance with the regulations of authorities having jurisdiction and all applicable codes. It is the responsibility of the installer to determine and follow the applicable codes. This equipment is to be installed only by an experienced installation company which employs trained personnel.

⚠ WARNING

Rigorously adhere to field wiring procedures regarding proper lockout and tagout of components.

⚠ WARNING

To avoid electrical shock, personal injury or death:

1. Installer must be qualified, experienced technician.
2. Disconnect power supply before installation to prevent electrical shock and damage to equipment.

⚠ CAUTION

If the FAN Switch remains in the left-most (Off) position the thermostat will NOT function properly.

Introduction

This thermostat conversion kit number 107345245 converts a fan coil unit thermostat to a thermostat without a 3-speed switch. The thermostat kit includes a cover that does NOT have an opening for the 3-speed control switch. The following is the proper procedure to convert the thermostat.

Procedure

1. Carry out this procedure before mounting the thermostat or applying power to it. If the thermostat is already mounted, turn off all power to it before proceeding.
2. Slide the FAN switch on the front of the thermostat to the setting at which you want the motor to run all the time.

Note: Once you exchange thermostat covers, the user can no longer change this setting.

3. Remove the cover from the thermostat by gently prying behind the left hand edge of the cover with a small screwdriver, then pulling it off as shown in Figure 1 and Figure 2.
4. Adjust the dip switch and jumpers to your desired configuration (see thermostat installation manual).
5. Pull off the fan slide switch cap (Figure 3).

Note: Be careful not to change the position of the switch you set in Step 2.

6. Place the new thermostat cover that does not have the 3-speed switch opening on the thermostat (Figure 4).

Figure 1: Pry behind left hand edge of cover to remove

Figure 2: Pull left end of cover away until tabs at right end are cleared

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Figure 3: Remove plastic fan slide switch cap

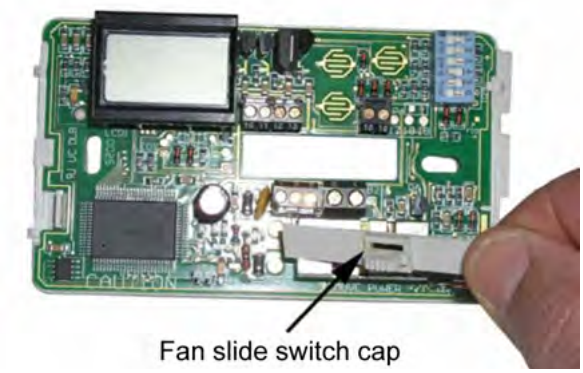


Figure 4: Thermostat cover without 3-speed switch opening

Automatic Changeover Switch for Automatic Seasonal Changeover on Two-pipe Systems

Group: **Applied Air Systems**
Part Number: 10333101
Date: August 2002

Safety Information

⚠ WARNING

Installation and maintenance are to be performed only by qualified personnel who are familiar with and in compliance with state, local and national codes and regulations, and experienced with this type of equipment.

⚠ CAUTION

Sharp edges and coil surfaces are a potential injury hazards. Avoid contact with them.

Introduction

These line voltage changeover switches are designed to switch a thermostat from heating to cooling based on a change in supply water temperature. The switches can be mounted on 5/8" or 7/8" O.D. copper tube or iron pipe.

Both models are easily mounted to the supply piping with a simple spring clip included with the thermostat.

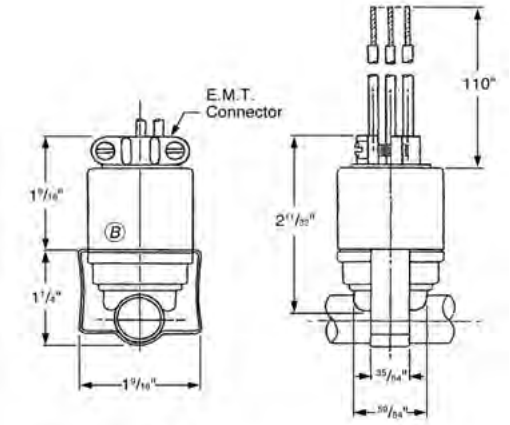
Procedure

Models

The 039398600 model (fig. 1) has 110 in. leads and is the standard changeover switch. The 06361801 model (fig. 2) has the same operating characteristics and includes 18 in. conduit and connector.

Both models are snap acting, SPDT switches.

Figure 1: Automatic Changeover Switch (Kit P/N 039398600)



Terminal No. 1 *Black 60455 (Common)*
Terminal No. 2 *Red 60456 (N.O.) – Heating*
Terminal No. 3 *Blue 60457 (N.C.) – Cooling*

Type 14TC33
Open Temp Term. 1 and 3, 95°F ± 6°
Close Temp Term. 1 and 3, 65°F ± 6°

U.L. File – E29653
U.L. Guide – SDFY2
Volts – 120
Amps – 25

Terminal No. 1 has a black wire and is the common (C) connected to valve (valve cycle) or to the yellow wire of the speed switch (fan cycle).

Terminal No. 2 has a red wire and is normally open (N.O.). Connected to the heating (red) wire of the thermostat.

Terminal No. 3 has a blue wire and is normally closed (N.C.). Connected to the cooling (blue) wire of the thermostat.

At approximately 65°F, plus or minus 6°F, terminals 1 and 3 are closed and terminals 1 and 2 are open. At 95°F, plus or minus 6°F, terminals 1 and 2 are closed and terminals 1 and 3 are open.

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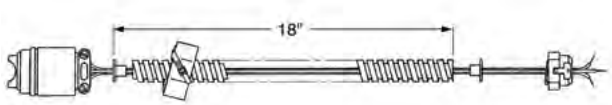
Specifications

Table 1: Electrical Rating

Model	Voltage	FLA	LRA	Restive
039398600 061361801	24—240	15—5	90—30	25
Changeover Range	65ºF to 95ºF (18ºC to 35ºC)			
Maximum Operating Temperature Limits	220ºF Fluid Temperature @ 125ºF Ambient (104ºC Fluid Temperature @ 52ºC Ambient)			
Agency Approval	UL Listed, CSA Approved			

The specifications above are nominal and conform to generally acceptable industry standards. Daikin is not responsible for damages resulting from misapplication or misuse of its products.

Figure 2: Automatic Changeover Switch (Kit P/N 061361801)



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